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STEEL

The Magazine of Metalworking and Metalproducing

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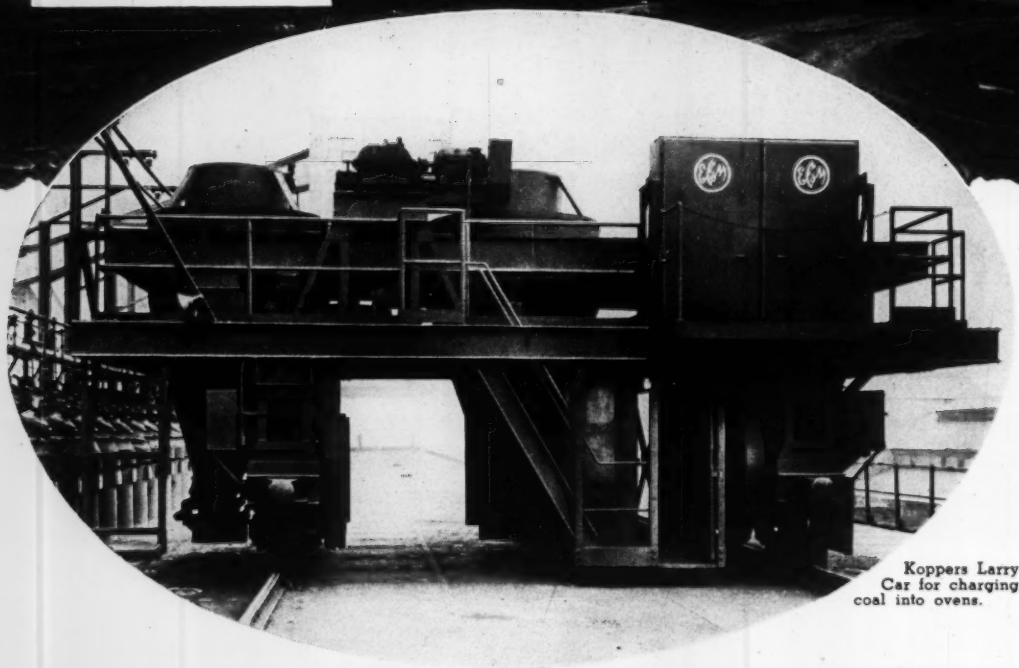
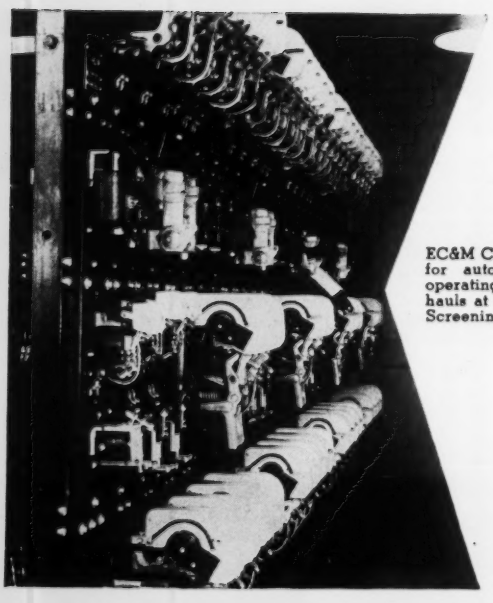
Coke Pusher built by Wellman Engineering Company, for the Wilputte Coke Oven Division. Door-Machine is in left foreground.



Koppers Larry Car for charging coal into ovens.

Here's How



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3. Equipment of sound basic design applied by accur engineering results in excellent operation of the machi from the first operation throughout their entire life.

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Behind the Scenes . . .

Life Begins Under 40

Business Manager Jim Zuber's cohorts and independent research organizations have completed a survey on readership. They find that 36 per cent of STEEL'S readers are under 40 years old; 34 per cent are 40 to 50 years old; 30 per cent are over 50 years old. About 84 per cent of STEEL'S readers study the advertising pages in each issue. Readers spend an average of 50 minutes with each issue, which is nearly one-third of the time they spend on all their business paper reading. About 87 per cent of the reading of STEEL is done at the office or plant during working hours when business problems are foremost in mind.

Paradise Lost

We have just been struck by man's mechanical ingenuity. Within a few feet of us are a typewriter, a dictating machine, a telephone and an adding machine. Five days ago the telephone went on the blink and a repairman took over an hour to fix it. Our office under the steam pipes is so small that we had to retire to the men's room while the job was in progress.

As luck would have it, on the same day service men making quarterly checks arrived to look over our typewriter, dictating and adding machines. Each time we had to retire to the men's room while the survey was in progress.

Don't tell us about how man's mechanical ingenuity is a great time saver.

A Lively Hassle

The editors last week refused to give circulation to a word they suspected of very recent coinage. The word had a nice Shakespearian ring to us; we think it ought to become a part of the language. The first sentence in Art Allen's "Mirrors of Motordom" for Aug. 7, page 69, originally came over the teletype as "Lively hassle developed. . . ."

Knowing the vagaries of the teletype operator's spelling, the boys upstairs assumed that an error had been made and tried to figure out what "hassle" should have been. Rassle? Hustle? Nothing fitted. A check with Art disclosed that "hassle" was precisely what he had meant. He says it's a word of uncertain origin meaning "scuffle" or "mix-up."

Since neither Art nor any other of the editors could find the word in any dictionary or reference book, the thing was changed to "scuffle" and that's how it appeared in the magazine.

But we're not tyrannized by the dictionary, and we don't care whether there's a hassle or not resulting from our use of the word.

The Maginot Line

Lively hassle has developed on the subject of receptionists. For years we have heard and we have done our share of complaining about the icy receptionists who think they're a Maginot line to protect the boss.

Comes the rebuttal. R. W. Walker writing in *Industrial Marketing* says, "All we receptionists ask is that you treat us with as much normality as possible. Save the flattery, state your case and credit us with some intelligence. Present your card, ask for a specific person. If you're a salesman, admit it."

Coming Up

Coming up next week, Aug. 21, is the fourth in STEEL'S series on depreciation and re-equipment reform by Associate Editor John Morgan. It will be a study of how some companies manage their re-equipment problems. Earlier stories on the subject appeared May 8, June 19 and July 31. Reprints of the July 31 article are still available.

Puzzle Corner

First in with a correct answer to the July 31 problem about the Panama canal is J. C. Tennison of Tennison Brothers Inc. It makes no difference in the amount of water pumped out whether the vessel is a destroyer, battleship or row boat.

If a farmer tethers a cow on the periphery of a circular pasture 100 feet in diameter, with a rope long enough to permit grazing over exactly half the area of the field, how long is the rope?

Shrdlu

(Editorial Index—page 45)

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ABC

STEEL

The Magazine of Metalworking and Metalproducing

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Next Week **... Annual Production of Steep Rock Iron Ore Seen at 10 Million Tons ... Inventory Control System Saves Floor Space, Cuts Overhead Costs ... Slab Slicer Cuts Common Shear Troubles**

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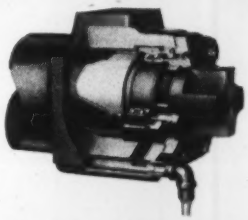

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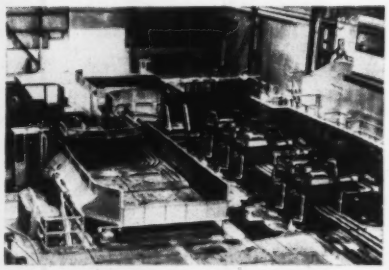

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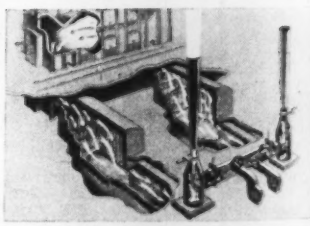
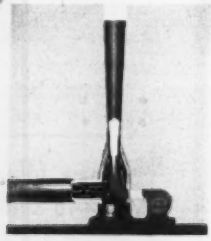


Furnace Control System

. . . Morgan-Isley increases efficiency of any regenerative furnace at relatively low installed cost.



Air Ejectors

. . . efficiently handle hot gases and fumes as high as 3000° F.

August 14, 1950

Order Out of Chaos

One of the most encouraging features of the nation's present predicament is the fine spirit of determination with which most elements of society have responded to the current emergency. Industrial groups, labor unions and the public generally have demonstrated their readiness to do whatever is necessary to meet the challenge which confronts the nation.

In sharp contrast to this fine attitude is the discouraging state of confusion which exists in the executive departments of the government. There is wrangling where there should be teamwork. Agencies and bureaus still are struggling with the details of many plans which were supposed to have been settled months and even years ago. Since passage of the Security Act of 1947 we have spent a lot of time and money on plans that were intended to place the nation in a state of preparedness for any emergency.

The emergency is here, but our highly publicized phantom orders, blueprints, plans and other details of preparedness do not seem to be ready. In many respects we are going to have to start from scratch.

For instance, we were assured that if a situation such as the Korean invasion occurred, the government would be ready with all of the machinery necessary to handle procurement, manpower, etc. Instead of being ready, we find the Munitions Board, National Security Resources Board and Department of Commerce all jockeying for position in the race to determine which agency will do this or that. We see confusion between the Department of Labor and the Selective Service System as to which will assume authority over manpower. Other agencies are engaged in similar struggles to seek power and authority.

Many government officials have worked hard and in good faith on projects which they thought would help us to be prepared. Hundreds of industrial executives helped in advisory committees on what they thought was a program of preparedness. At present it looks as if much of this time and effort has been wasted.

Obviously what is needed is a strong man or group of strong men to make policy decisions and to co-ordinate activities. The defense program needs a capable boss who can develop promptly a high degree of order out of the present chaos.

* * *

INDUSTRY IS READY: American steel industry is in excellent shape to take on whatever is necessary to meet our present challenge. This does not mean that it can keep on supplying steel for peacetime needs at the current unprecedented level and also fulfill military requirements. It means that it has more than 100 million tons of ingot capacity against 81 million tons at the beginning of World War II. By the end of 1952 the industry's capacity will be at least 105,750,000 tons.

Of the 18.5-million-ton gain in the decade, 15.3 million tons was built during World War II. Of this, more than 8 million tons was financed by the steel industry and a little less than 7 million tons by the government. Steel companies have purchased most of the government-financed facilities.

Apparently the industry's energetic efforts to further increase capacity have registered in Washington. The report of the President's economic advisers stressed the importance of more capacity but it did not repeat the one-time threat of President Truman to have the government

(OVER)

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build steel capacity if private steel producers were unable or unwilling to do so. Also, government officials who a few years ago were damning steel executives for unrealistic attitudes toward expansion have not been conspicuously vocal recently.

Resourcefulness and ingenuity, which rise to heroic heights in time of emergency, will pace the steel industry to new accomplishments.

—pp. 54, 60

* * *

WE MUST BE CAREFUL: For security reasons, certain information regarding war contracts should not be divulged publicly. Defense Department says it is all right for a military contractor to announce that he has received a contract or letter of intent, that he will need certain numbers of workers to execute the contract and that the contract calls for the production of certain items to be described in general terms such as aircraft of standard types (B-29s, F-86s, etc.) combat vessels, tanks, trucks, ammunition, etc.

Contractors must not release without specific clearance the number of items to be produced, production schedules, rates of delivery, sources of supply, movement and storage of supplies and materials, information on sabotage attempts, details of plant security measures and some other information.

In case of doubt, ask Security Review Branch, Office of Public Information, Department of Defense for a ruling. —p. 60

* * *

TRUE COST IS HIGHER: Chrysler Corp. turned over to the federal government $16 million for excise payments for June. This payment for a single month was as much as for the entire year of 1938 or 1939. During 1949 Chrysler prepared and filed 255,000 separate tax forms and returns. Paperwork in connection with taxes cost the corporation $500,000 a year.

Chrysler also has the responsibility of rendering free service for Uncle Sam. In 1949 it collected from its employees more than $30 million in income withholding and old-age taxes and turned it over to the government. Chrysler also maintains a large staff to handle savings bonds sold to employees. From July, 1941, to June 30, 1950, it sold and processed 6,161,379 bonds having a maturity value of $201,754,575.

When you consider that all corporations are doing these things, you realize that today's federal budget does not reflect the true total cost of government. To that budget should be added the cost of government work now performed free by private enterprise. —p. 67

* * *

TRADE BALANCE NEARER: In 1949 United States exports exceeded imports by $5.4 billion. Since the middle of last year exports have been declining and imports have been mounting. In May, 1950, exports and imports were running at annual rates which would indicate an excess of exports over imports of only $2.2 billion for 1950.

Narrowing the trade gap to this extent was accomplished prior to the Korean hostilities. Our nation's present commitments will force industry to devote less attention to foreign trade and cause us to import more strategic materials. Future restrictions on the output of consumer goods in the United States may encourage heavier purchase of these items from abroad.

Thus the Korean affair may help to bring about a trade balance that will be beneficial all around. Industry and labor union protests against certain mounting imports, which were on the increase before the Korean attack, probably will cease during the emergency. —p. 65

* * *

EVOLUTION IN HEATING: Castings and rolled steel have played shifting roles in the evolution of heating equipment for American homes. Before central heating came into vogue, wood and coal heating stoves usually were assembled of castings. In central heating, warm air systems called for a liberal use of flat-rolled steel plus castings for the firebox. Hot water systems employed castings for boiler and radiators and pipe for distribution.

During the past quarter-century the old-style radiator has been redesigned many times. Each new model has been longer, lower and leaner than its predecessor. At present there is a tendency to install baseboards instead of radiators and in some instances this involves a shift in materials from cast iron to pressed steel.

United States Radiator Co. is producing a radiant baseboard at the rate of 1800 lineal feet per shift. The heating elements are of 14 and 20-gage cold-rolled steel shaped in presses and fabricated by welding and brazing. —p. 82

E. C. Shaner

EDITOR-IN-CHIEF

News Summary

LESS COMPETITION—You may have less competition from the military in getting steel than you expected (p. 53). The present leisurely pace of military procurement planning means that only about 5 million tons of finished steel will be needed a year for defense and Korean purposes, a mere 3 million tons more than is used by the Defense Department normally. Indecision in Congressional and administration circles makes it hard to plan much ahead. Allocations of steel will probably still be voted and used, but perhaps not to the extent first contemplated.

STEEL POTENTIAL—In World War II, the government and the steel industry installed 15.4 million tons of additional ingot capacity (p. 53). How much will be installed in the present hot and cold conflict with the Communists? Now a-building but planned by industry long before the cold war turned hot is some 5.7 million tons of additional capacity scheduled for completion by the end of 1952.

CONSPICUOUS ABSENCE—Evidently the government doesn't think its help is needed for steel expansion this time because the President's economic report to Congress made no request for authority to build public plants (p. 60). That proposal was made in the 1949 economic report. The President's Council of Economic Advisers says, "The economy is in good shape to deal with increased programs (for defense) of substantial scope."

PICKING UP—The privately financed and planned steel expansion in progress means good business for makers of steel mill equipment (p. 55). Rolling mills to produce semifinished steels are expected to be in particularly heavy demand.

WANTED: WORKERS—How's your labor situation? For most metalworking employers the manpower supply is getting tighter, but it's still much better than before World War II (p. 56). That's because armed forces' deferment policies are more liberal, the labor pool is bigger and better trained and more companies can rely on their World War II experiences in meeting current problems. Manufacturing employment in mid-July bounded to nearly 14,750,000, within a million of the postwar peak set in late 1948.

TAXED TRANSPORT—Chrysler Corp. turned over to the government $16 million in excise payments for June, the largest excise tax payment for one month in company history and as much as the company paid in all of 1938 or 1939 (p. 67). During 1939-1941 when Chrysler sold 2,851,000 vehicles, it paid $151 million in taxes. During 1947-1949 when about 13 per cent more vehicles were produced, total taxes paid were $536 million, better than three times the prewar bill . . . Chrysler's experience is common in all industry which now faces even higher tax rates.

IN SPITE OF—Taxes or no taxes, business is good for automakers and other metalworking producers (pp. 70-73). They're taking a last fling at all-out civilian production before higher taxes, credit and other controls and more military orders interfere. The steel ingot rate continues at near capacity. New construction outlays reached a record $2.6 billion in July, 25 per cent above last year. Electric utilities in the U. S. will generate at least 310 billion kwhr this year, 118.5 per cent more than in 1940. Domestic freight car orders in July jumped almost 28,000 over those of a month earlier.Television receiver production in the first half of 1950 equaled that for all 1949.

HERE AND THERE IN INDUSTRY— Spurred by the Communist aggressions, European capital expenditures are mounting (p. 64) . . . The U. S. trade gap between exports and imports may be narrowed because of the Korean war (p. 65) . . . The scrap industry has spent $50 million for new equipment and facilities since V-J Day (p. 54) . . . The CIO is moving in to try to organize Weirton Steel Co. employees now that the Weirton Independent Union has been disestablished (p. 57) . . . Baldwin Locomotive Works and Lima-Hamilton Corp. will consolidate their operations under the name Baldwin-Lima-Hamilton Corp. (p. 58) . . . Copperweld Steel Co. is buying all the government-built facilities at its Warren, O., plant (p. 58).

NEWS SUMMARY
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HOARDING STEEL...

is hardest on the hoarder!

Buying steel for which you have no immediate need helps set up a vicious chain reaction. The next fellow follows your example—and the next. Supplies are soon depleted. In a week or two you may be searching in vain for a certain steel—which is lying idle in a neighboring plant!

The primary purpose of the steel warehouse is to supply the day-to-day needs of industry—not to help build up a host of private stock piles. Warehouse stocks are constantly being replenished by mill sources to balance receipts against shipments. But if everybody starts buying beyond their immediate needs the system breaks down—and everybody suffers.

The vital function of the steel warehouse was recognized in World War II. Provision was made for continuous replenishment of warehouse stocks. This recognition continues.

Hence we urge steel users to exercise judgment in placing orders. Order from warehouse for your current needs only. Our company and all the other steel-service organizations will continue to serve you to the best of our combined abilities. But our usefulness will be crippled if steel buyers themselves let the situation get out of hand. So let's work together to maintain production throughout the country.

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STEEL
A PENTON PUBLICATION

Military Steel Buying May Lag

Confusion in Washington makes it hard for the military to figure much ahead. Only 5 million tons of steel could be used a year at the present planning pace

ONLY 5 million tons of finished steel will be used a year for defense and Korean purposes if military procurement planning continues at the current leisurely pace.

Should the Korean conflict precipitate World War III, all bets are off, but now the odds are that the military could not for some time to come consume more than 5 million tons a year even if it wanted to.

Hodge-Podge Planning — That figure is much lower than many government and industry analysts first calculated. Why? Because a confused Congress, President and State Department haven't told the military planners what to plan for. Yes, the military can go ahead on the assumption that the President's supplemental requests for $16,085 million will be approved by Congress. That would only add 3 million tons to the 2 million tons of steel that has been going each year into arms manufacture.

Five million tons is a maximum for a while because it will take at least six to twelve months to get into significant production of material to be paid for by the $16.1 billion asked of Congress. Industry must tool up; the military must make up its mind on what it wants. Large sums will go for tanks and certain classified weapons that still have a long way to go before reaching the actual contracting stage. Of the $16.1 billion requested, only about $5.3 billion has yet been definitely earmarked—for planes and trucks.

Steel Reserves—The 3 million tons in excess of the usual annual military consumption of steel may come from expanded facilities that the steel industry now is building. In the first six months of 1950, 1,170,700 tons were added to capacity. By the end of 1952, expansion programs in progress or planned will boost the U.S. steelmaking potential by 6,363,000 tons over what it was Jan. 1.

What effect will the unexpectedly low level of military steel buying have on the general supply situation and allocations? Normally a diversion of only 3 to 5 per cent of the nation's steel from peacetime uses would go almost unnoticed. But with the metalworking industries producing peacetime goods up to the hilt, that 3 to 5 per cent may give another twist to the sword. Allocations probably will still be necessary. One hope: Scare buying of steel and other metalworking products may soon ease enough to take off some of the pressure from civilian demands.

Army Reactivates Arsenal

The Army will reactivate part of the Twin Cities Arsenal, Minneapolis, for limited production of small arms training ammunition.

Federal Cartridge Corp. will be the contractor to handle the new production. Federal will employ 500 to 800 new employees, while government employees at the plant will be increased by about 50.

No deliveries will be made for about five months because extensive reactivation and retooling is needed.

Artillery Shell Production

Thompson Co., Binghamton, N. Y., is converting its facilities to manufacture split grommets for artillery shells, products that the company also made during World War II. The firm is concluding the production of metal dispensers for wax paper.

War Forgings Shipments Rise

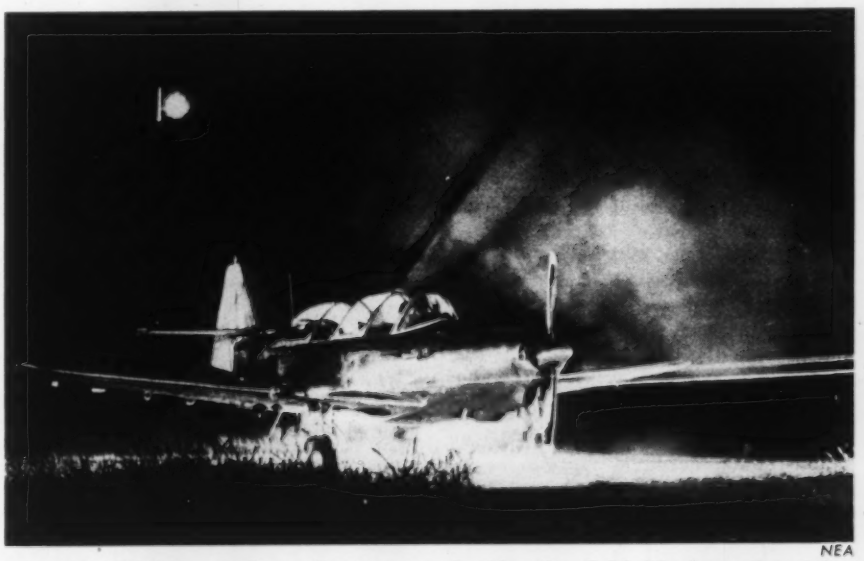
Kropp Forge Co., Chicago, reports shipments of forgings largely for armament purposes rose 25 per cent in the last 90 days. War work now comprises 18 to 20 per cent of the company's dollar volume of business.

War-Built Steel Capacity Strengthens U.S. Now

FIFTEEN MILLION tons of steelmaking capacity installed in the United States by the steel industry and the government to win World War II are available for use in event of a World War III.

Most all of this additional capacity is now owned by the steel industry, for after the war it added to its holdings by purchasing a large portion of the government-financed facilities. On most of the remainder the steel industry has long-term leases, with options to purchase.

To "steel" the nation for World War II, the steel industry financed



NEA

L'IL BUCKAROO: A Texas Engineering & Mfg. Co. T-35 "Buckaroo" training plane fires two 30-caliber wing guns during firing tests. Three of the Temco planes were bought by the Air Force for testing purposes. The all-purpose training plane has a retractable landing gear, 145-horsepower engine and internal gun mounts. It is the first plane sold to the Air Force by a postwar company

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installation of 8,414,062 net tons of ingot capacity and the government financed 6,939,460 tons, making a total expansion of 15,353,522 tons, according to a tabulation made by W. A. Hauck just before he died July 29. Mr. Hauck was chief of the steel control branch of the iron and steel division of the War Production Board during the last war and was closely associated with the expansion program.

More Coke and Iron Too—In addition to expansion of ingot capacity the country's coke producing capacity was enlarged for World War II by 13,410,646 net tons and the pig iron capacity by 15,738,064 net tons. Industry financed 8,408,146 tons of the coke capacity, and the government financed 5,002,500 tons; industry financed 8,786,064 tons of the pig iron capacity, and the government financed 6,952,000 tons, Mr. Hauck's report shows.

In expanding the pig iron capacity for World War II, 31 blast furnaces were built under industry-financed and government-financed projects. These furnaces are located in Pennsylvania, Maryland, Alabama, New York, Ohio, West Virginia, Kentucky, Indiana, Illinois, Minnesota, Texas, Colorado, Utah and California.

No Mothballs — Being relatively new and therefore efficient and being in many cases integral parts of steel producing plants, the facilities built during World War II are not in "mothballs." In most instances they are in full operation. They're producing for civilian consumption today, but tomorrow they could be producing for war.

If the United States were to go into a full-scale World War III tomorrow it would have 100 million tons of steel producing capacity, compared with 81,619,496 net tons on Jan. 1, 1940. Of this 18.5-million-ton increase, the bulk consists of the 15.3 million tons built during World War II.

Much more capacity is a-building, though, and the projects now in prospect for completion by the end of 1952 will hoist the industry's capacity to about 105,750,000 net tons annually.

The net increase of 18.5 million tons since 1940 does not tell the whole story; actually, more new facilities than that have been built, some as replacements for old equipment.

The 18.5 million tons are over and above mere replacements.

$2 Billion Expansion—To expand the nation's steel expansion for World War II, an expenditure of $2,036,787,518 was made, Mr. Hauck calculated. Industry financed $1,104,932,978, or 54 per cent, and the government financed the remainder, $931,854,540.

In disposing of its share of the facilities the government received its established fair value in many instances, and in most cases got at least 80 per cent of that fair value, according to the late Mr. Hauck. This fair value, established by the government, was based on reproduction cost, accrued depreciation, estimated future utilization, and other relevant factors. It did not include consideration for rentals paid prior to disposal.

By the end of last November, 122 projects which cost the government $740,428,431 had been sold for $251,978,862. That sales total represented 72.4 per cent of the projects' fair value of $347,898,712, and 34 per cent of the total cost of them, Mr. Hauck calculated.

Considering sales prices and rentals but excluding interest on investment, the return on investment of the government-financed steel plants and facilities sold in depreciated condition to private industry was estimated by Mr. Hauck at above 50 per cent.

Good Investment—Mr. Hauck was convinced that the government's investment was a good one. Not only did the government get back 50 per cent of its investment but (1) it had the benefit of production for the second world war, (2) the peacetime national economy has been strengthened by the additional capacity, (3) the nation is provided with an asset for any future national defense or war preparedness, and (4) the government has received higher profit taxes for the last seven years and will continue to get them as a result of the additional production and earnings from operation of the additional facilities.

Mr. Hauck served the government from June, 1940, through June, 1948. He was deputy executive of the iron and steel branch of the National Defense Advisory Commission and subsequently held similar positions with the Office of Production Management, the War Production Board, the Reconstruction Finance Corp.'s War Assets Corp., and the War Assets Administration.

He was in charge of the steel expansion program in 1941 and 1942 when virtually all of the steel expansion for World War II was planned and created.

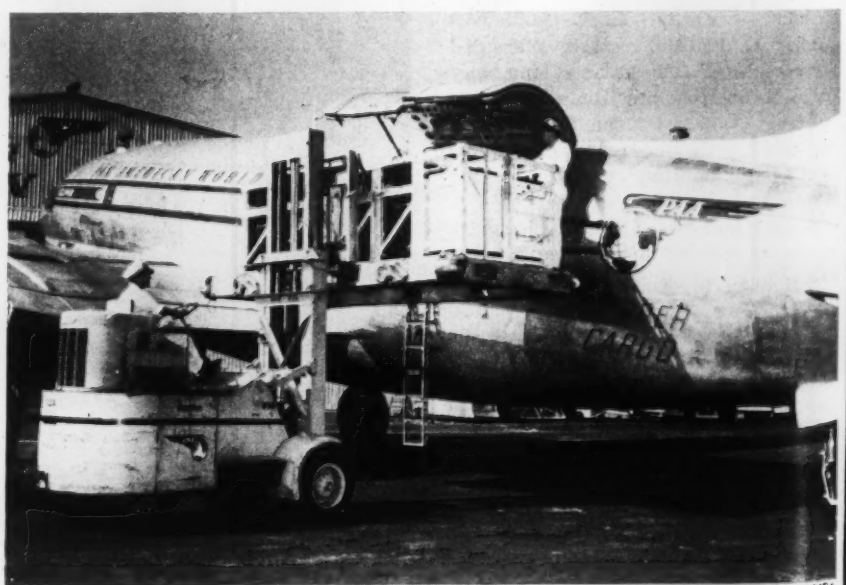
During his eight-year tenure in government posts he made a number of studies and reports on steel industry capacity, including "Steel Expansion for War," published by STEEL.

Scrap Industry Ready for Scrap

The iron and steel scrap industry is ready to meet the needs of the defense program.

It finds itself prepared because it has spent $50 million for new equipment and facilities since V-J Day.

Peace . . .



NEA

COOKING WITH GAS: That's what they're doing in Colombia, South America. The result is that gas ranges are being flown from the United States in planeload lots. So far 670 ranges were flown from Miami, Fla., to Barranquilla, Colombia. Here a Pan American World Airways' Clipper is being loaded

says Edwin C. Barringer, executive vice president, Institute of Scrap Iron & Steel Inc., Washington.

Commenting that the $50 million figure is conservative, Mr. Barringer points out that an estimate of the additional tonnage the industry can handle is impossible to make because of varying conditions and grades of scrap, but "the scrap industry," he adds, "has never been so highly mechanized and its capacity so large.

"There are 2000 dealers in the United States engaged primarily in handling iron and steel scrap; on the average, each has put a minimum of $25,000 into expansion since V-J Day," Mr. Barringer says. "Merely to buy several trucks, or a crane, or make minor improvements to a scrap yard would absorb that sum. On the other hand, scores of baling presses costing up to $100,000 each have been installed. Most dealers have bought overhead cranes, replaced old shears, or otherwise expanded their facilities. Some individual outlays," Mr. Barringer says, "exceed $500,000."

Ryan To Double Employment

Ryan Aeronautical Co., announcing its biggest order since World War II, will more than double its plant force in San Diego, Calif.

Ryan, which has a new contract to produce military transport fuselage sections for Boeing Airplane Co. at Seattle, says it expects to increase the plant force from 1800 to 4000, with 1000 being added within the next 90 days.

The company also has other new orders, raising the total to $10 million.

Wright Gets $4 Million Order

Wright Aeronautical Corp., Wood-Ridge, N. J., has received an order for $4 million worth of engines for Navy transport planes. The order has been in negotiation for several months and had no connection with the Korean situation.

Hamilton To Make More Props

Hamilton Standard Division of United Aircraft Corp. was asked by the U. S. Navy to step up production of propellers for Navy and Air Force. The propellers are to be used on several Navy planes and one on a large Air Force transport plane.

Hamilton also increased orders for integral oil control assemblies that will be used in the Air Force transport plane. Hamilton officials say the new orders will mean a gradual increase in employment and production to reach a peak by mid-1951.

Columbia Leases U.S. Foundry

Columbia Steel Co., a U. S. Steel Corp. subsidiary, has leased from the government the steelmaking facilities of the wartime steel foundry adjacent to its Pittsburg, Calif., plant.

The foundry was built and operated during World War II by Columbia as lessee from the government. Except for a brief time, it has been idle since the war.

. . . War

NEA

EVACUATING WOUNDED SOLDIERS: A tractor-hoist was rushed into service to remove seriously wounded soldiers taken from this plane when it arrived at an air base in Japan from the South Korean battle front. Litters were placed on the hoist platform. Doctors were on hand to meet the planes

Equipment Outlook Better

Expansion of primary steel facilities will boost the need for rolling mills

OUTLOOK for new steel mill equipment business is brightening from the substantial expansion being made in primary steel production facilities.

Among equipment expected to be in increased demand are rolling mills, particularly those for production of semifinished steels. Difficulty of steel ingot conversion deal operators to obtain desired rolling time on breakdown mills indicates an unbalanced situation already exists. Expansion emphasis is expected to be on intermediate rolling operations, although finishing mill facilities will be substantially augmented in many instances.

Steel mill equipment interests had an excellent first half from a production standpoint as result of heavy bookings of foreign and domestic orders throughout 1949. United Engineering & Foundry Co., Pittsburgh, for example, reports dollar value of shipments in the first six months of 1950 reached an alltime high.

Laggard—During these first six months new order volume failed to match output; thus order backlogs are not as far extended as at the close of 1949.

Recent steel mill orders include a blooming-slabbing mill awarded to United Engineering & Foundry Co., Pittsburgh, by Pittsburgh Steel Co. The new mill, which should be in operation within the next eight to ten months, will create a better balance between the company's semifinished and finished product capacity. The company's present blooming mill can handle only 70 to 75 per cent of ingots produced. Avery C. Adams, president, says installation of the new blooming-slabbing mill will not interfere with company's shipments of finished products. The mill, he explains, will be the foundation for further diversification of product.

Winding Up—The major portion of steel mill equipment contracts for expansion programs in European countries have been awarded, most trade authorities believe. But a number of contracts are still pending: Two reversing sheet mills for Italy and one for Greece, a rod mill for France and additional facilities for the "Sollac" sheet and strip mill expansion program in France.

Installation of Westinghouse electrical equipment is now being made in a new reversing hot-strip mill of Companhia Siderurgica Belgo-Mineira at Monlevade, Brazil. The electrical

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apparatus includes a 2000-hp main drive motor and 1750-kilowatt motor-generator set, various Rototrol rotating regulator control units, and auxiliary motors ranging up to 250 hp.

Shot in the Arm—Suppliers of motor drives and other electrical apparatus for steel mill rolling facilities report sharp upturn in new orders during July. In one instance July bookings exceeded the total for the preceding five months. The pending increase of 10 per cent in prices for electrical apparatus and the decision of major steel companies to expand facilities and speed up modernization programs in the light of military developments were believed to be the principal reasons for a heavy influx of new electrical apparatus business during July. Suppliers expect demand over remaining months this year to be about one-third above the monthly average for first six months.

Ships Furnace to Australia

An electric furnace for annealing silicon steel is on its way from Westinghouse Electric Corp.'s industrial heating department at Meadville, Pa., to Lysaghts New Castle Works, New South Wales, Australia.

The rectangular bell-type furnace is capable of heating 50,000 pounds of steel to 2000 degrees F in 70 hours.

Contracts Let for 4 Boats

Contracts for the three ore-carrying boats and the one limestone-carrying vessel that United States Steel Corp. subsidiaries recently announced they would order have been awarded.

For Pittsburgh Steamship Co. the American Ship Building Co. will build two of the ore-carrying boats at Lorain, O., and the Great Lakes Engineering Works will build the other one at River Rouge, Mich.

The limestone-carrying boat ordered by Bradley Transportation Co. will be constructed by the Manitowoc Shipbuilding Co., Manitowoc, Wis. All four boats are to be completed in time for the opening of the 1952 lake shipping season. It is anticipated that the ship yards will start to lay the keels in December, 1950.

Follansbee, Newport End Talks

Discussions over the proposed merger of Follansbee Steel Corp., Pittsburgh, and Newport Steel Corp., Newport, Ky., have been suspended. The companies could not agree on conditions of a merger of their facilities (see STEEL, July 24, p. 32).

Manpower: What's the Score?

It's better than ten years ago because deferment policies are liberal, the labor pool is bigger and better trained and more companies know what to expect

WHAT'S the score on manpower? Will the labor market get tighter as the nation's defense program accelerates?

Although some professions and skilled occupations will be short and particular areas in difficulty at times, the general situation is better than ten years ago. Here's why:

A list of critical occupations and industries for the guidance of the armed forces in determining what reservists and National Guardsmen should be deferred is liberal. The deferment policy of the Selective Service System is to be more liberal than the setup for guardsmen and reservists and is to be much more lenient than the general deferment policies in World War II.

Factory employment is rising, assuring industry of a greater pool of trained workers than before World War II. The companies hiring for high peacetime demands now will be converting, at least partly, to arms production eventually. They will have their worker force already intact That wasn't the case ten years ago.

Nearly 900,000 women have joined the civilian labor force in the last year.

Companies are reshaping their World War II programs for training inexperienced personnel. Experiences of many firms in World War II with manpower problems will stand them in good stead in case of shortages.

Who Will Be Deferred?

A government plan on deferment of essential personnel from duty in the armed services is still in the nebulous stage, but some phases of the policy are shaping up.

The Labor Department's list of critical occupations for the guidance of the armed forces in determining what reservists and guardsmen to defer is advisory only. It carries no guarantee that men in the occupations named actually will be deferred.

Metalworking occupations named include: Marine architect, chemist, engineer (chemical, civil, electrical, industrial, mechanical, mining, petroleum, sanitary, chief, marine), ship master, mathematician, metallurgists, tool and die designer, aircraft and engine mechanic, boilermaker, refractory bricklayer, coremaker, petroleum driller, die setter, airplane electrician, foreman in critical industries, laboratory apparatus glass blower, instrument repairman, marine lay-out man, loftsman, machinist, maintenance mechanic, millwright, model maker, molder, pattern makers, precision-lens grinder, iron and steelroller, ship rigger, petroleum processing stillman, tool and die maker.

In drawing up a list of critical industries, the Commerce Department was governed by: The industry's direct contribution to production of war materials; its services necessary for maintaining war materiel production; and its activities essential for the maintenance of safety, health and national interest.

Of the 72 industries classified as essential, these relate to metalworking: Ordnance and accessories; chemicals and allied products; products of petroleum and coal; rubber products; primary metal industries; fabricated metal products; stone, clay and glass products; electrical machinery, equipment and supplies; transportation equipment; professional, scientific and controlling instruments; metal, anthracite, bituminous and lignite mining; crude petroleum and natural gas extraction; mining and quarrying of nonmetallic minerals except fuels; construction; railroads; trucking and warehousing; water and air transportation; pipe line transportation; telecommunications; utilities; automobile repair services and garages.

Factory Jobs Near Peak

Manufacturing employment in mid-July, at nearly 14,750,000 rebounded to within a million of the postwar peak set in the fall of 1948, says the Bureau of Labor Statistics.

Continuing June's near-record level, employment in industrial and commercial establishments as a whole totaled 44 million in July, a 12-month net gain of 1.5 million. The July rise came too early to have felt the impact of the Korean conflict. The July rise came despite vacation shutdowns.

Largest employment gain was in the construction industry which employed 100,000 more in July than in June.

Woman's Place: In the Plant

Nearly 900,000 women were added to the civilian labor force between

June, 1949, and June, 1950, says the Bureau of the Census.

Nearly 75 per cent of the increase was among women 45 years old and over. The number of girls under 20 in the labor force declined slightly from June of last year.

War Labor Experience Reviewed

West Coast employers are reviewing their World War II programs for training inexperienced employees. They're also building up their files on workers' wives and relatives who would be available if needed.

But there's no immediate danger of a labor shortage. The employers doing the most hiring, shipbuilders, still have more applicants than jobs.

CIO Starts Weirton Drive

The United Steelworkers-CIO will launch an organizing drive among Weirton Steel Co. employees whose Weirton Independent Union was disestablished when the company withdrew recognition in compliance with a court order.

The CIO's serious effort to organize the Weirton, W. Va., plant in 1944 was unsuccessful. Paul Rusen, director of the Steelworkers' District 23 at Wheeling, will be in charge of the new drive. His job will be to beat out a new independent union that has already sprung up in Weirton to take the place of the disestablished WIU. Winner will be the bargaining agent for about 12,000.

The new union is the Independent Steelworkers Union headed by William Huff, a veteran of 17 years in the mills. Other temporary officers are Steve Almason, first vice chairman; Joseph Kostur, second vice chairman; Thomas Read, secretary-treasurer; Nicholas Fennych, sergeant of arms; and Clinton W. Fiedler, chaplain. A 15-man steering committee representing all the mills also has been set up. None of the officers had any connection with the WIU.

Oliver Signs with UE

Oliver Corp. has signed an agreement with the United Farm Equipment Divisions of the United Electric Workers (independent) covering 1800 employees at its Charles City, Iowa, plant.

The agreement provides for a general wage boost of four cents an hour, $100 a month retirement benefits paid for entirely by the company, improved insurance and hospital benefits and other adjustments.

The producer of farm machinery has seven plants employing about 9000. Negotiations are in progress with unions on new agreements at plants in South Bend, Ind., Springfield, O., and Shelbyville, Ill.

Shipbuilders Get Raise

A wage increase of six cents an hour is provided in a two-year contract, effective until next June 30 for wages only, made between Bethlehem Steel Corp.'s Shipbuilding Division and the CIO Industrial Union of Marine & Shipbuilding Workers. The base rate for mechanics has been $1.72 an hour. The contract increases pension benefits also.

Do You Share Your Profits?

Possible revisions or amendments of regulations covering employer contributions under employee profit-sharing plans or trusts and employee welfare plans will be considered at a public hearing in Washington Sept. 6. The problem of formulating regulations on employer contributions under the plans also will be considered.

The subjects are of vital importance to many employers because of the current policy that employer contributions under such plans may be excluded from the "regular rate of pay basis." It's on this that overtime payments for employees must be computed. Persons desiring to be heard at the hearing must notify Wm. R. McComb, Wage and Hour and Public Contracts Administrator, Washington 25, by Aug. 24.

1950 AISE Exposition

Scheduled for Cleveland, Sept. 26 through 29, it promises to be of value in steel expansions

MANY IDEAS displayed at the 1950 Iron & Steel Exposition in Cleveland next month should be of value in the various expansion programs that have been announced over the past several months. That is the opinion of A. S. Glossbrenner, president of the Association of Iron & Steel Engineers.

Previews—The exposition will be held in Cleveland Public Auditorium, Sept. 26 through 29. Its theme is to be "Engineered Efficiency in Steel Plant Improvement." The biennial exposition will, say the over 150 exhibitors, bring some entirely new developments in products and processes to the attention of steel producers.

In one exhibit visitors will be given a chance to try their hands at cable splicing. In another, industrial television will be in actual operation with cameras located in various parts of the exposition. A technical paper will cover TV possibilities in production.

Papers—The AISE technical program will include 43 technical papers in all. They will be arranged in 14 separate sessions dealing with specific problems of steel plant engineering, operation and maintenance. On the afternoon of Sept. 28, H. B. Jordan, president of American Steel &

CALM IN A HOT SITUATION: The 108 fans that help the huge transformer beat the heat are not treating the young lady the same way. When the fans get going, though, they really whip up plenty of air—5400 cubic feet every second to be exact. The transformer is shown at the General Electric Co.'s Transformer & Allied Product Divisions plant at Pittsfield, Mass. It was built for Consolidated Edison Co. of New York. The 393,000 pound unit has more fans than any transformer built by GE

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NEA

HOT ITEM: Sen. Brien McMahon (Dem., Conn.), at right, who is chairman of the Joint Congressional Atomic Energy Committee, confirmed that advance work on the hydrogen bomb project will be carried on by Du Pont. The committee discussed the project with Crawford H. Greenwalt, Du Pont president, center. At the left is Gordon Dean, chairman of the Atomic Energy Commission

Wire Co., will present the main address.

Purchases, Proposals—Speaking at the same session will be T. D. Jolly, vice president of Aluminum Co. of America, who will speak on "Engineering and Purchases." Clifford Strike, president of F. H. McGraw Co., will discuss the "Proposed New England Steel Plant."

Another feature of the meeting will be an inspection trip to the Lorain, O., plant of National Tube Co. where new bessemer, rolling mill and seamless tube mill facilities were recently put into operation.

Mining Congress Begins Aug. 28

The essential role of the mining industry in the nation's defense will be emphasized at a forthcoming meeting of some 2000 metal and nonmetallic mining men who meet in Salt Lake City, Utah, Aug. 28-31 for session of the American Mining Congress.

Members of Congress, government officials and leading men in the mining industry will participate in discussions ranging from stockpiling for national security, atomic energy developments and the foreign aid program to labor relations, taxation, public land policies, mineral tariffs and the outlook for metals.

Besides economic and legislative matters the congress will conduct one of its most comprehensive programs on operating and production problems at a series of special sessions.

Locomotive Firms Merge

Baldwin Locomotive and Lima-Hamilton will consolidate their operations under one name

BALDWIN Locomotive Works and Lima-Hamilton Corp. will consolidate their operations under the name, Baldwin-Lima-Hamilton Corp. Marvin W. Smith, Baldwin president, and George A. Rentschler, chairman of the executive committee of Lima-Hamilton, jointly announced that the board of directors of their companies had approved a plan to consolidate.

Big Dividend—But before the consolidation Baldwin will transfer to a subsidiary company its principal investment securities—147,800 shares of common stock in General Steel Castings, 383,425 shares or about 64 per cent of Midvale Co. stock and the net proceeds from the recent sale of Flannery Bolt Co. common amounting to about $690,000. The stock of the subsidiary company will be distributed to Baldwin stockholders as a dividend.

The plan will require action by the stockholders of both companies. It is proposed that George A. Rentschler be chairman of the board and Marvin H. Smith president of B-L-H.

Nice Supplement — The principal products of the two companies supplement each other and will result in some diversification. In the diesel electric locomotive field, though, there should be substantial advantages in integrating the activities of the two organizations. Baldwin has facilities for manufacturing steam, electric and diesel locomotives, steam boilers, welded tank and plate fabrication, ordnance material, marine diesel engines, water power turbines, hydraulic press machinery, testing machines and power tools. Its Standard Steel Works Division turns out steel forgings, castings and tires, and wrought steel wheels, steel springs and weldless rings.

Lima-Hamilton, besides being a large manufacturer of steam, diesel and electric locomotives, produces diesel engines and large presses for the automotive industry and large machine and railroad tools. It manufactures special purpose machinery for the can-making industry, for sugar mills and for glass factories.

Fretz-Moon To Raise Capacity

Fretz-Moon Tube Co. Inc. is undertaking a $500,000 improvement program at its Butler, Pa., plant that will result in a 25 per cent increase in output. The program is made possible by an increase that is to be made in the supply of natural gas available to Butler industries.

Dodge Buys Chicago Thrift

Dodge Mfg. Corp., Mishawaka, Ind., acquired all capital stock of Chicago Thrift Co. Dodge is a manufacturer of power transmission machinery; Chicago Thrift manufactures and sells small metal and plastic banks, etched metal products like nameplates, instruction plates, clock and instrument dials and novelties.

In 1944 Dodge acquired Etching Co. of America, Chicago. Like Chicago Thrift, it manufactures and sells etched metal products. Dodge plans a merger of the two subsidiary companies under Illinois law. Upon consummation, operations will be conducted under the name, Chicago Thrift-Etching Corp.

Copperweld Buys Facilities

Copperweld Steel Co. is purchasing all the government-built facilities at its Warren, O., plant.

This purchase climaxes efforts to sell these facilities either separately or in combination with the entire Warren steel plant.

Purchase of the government-owned facilities will not immediately increase Copperweld's output but will enable it to proceed with a long-range improvement program at Warren, F. R. S. Kaplan, president, says. This program will include broadening

of the types and sizes of alloy and carbon steel products the company now produces. A principal finished product of the Warren plant now is bars.

Included in the acquisition are three electric furnaces, annealing furnaces, reheating furnaces, press equipment, hot and cold drawing capacity, and 40 acres of land.

The government facilities were built during World War II and have been operated by Copperweld under lease-rental arrangements. Sales price to Copperweld is $2 million.

In addition to the three government-built electric steelmaking furnaces Copperweld has six furnaces which it constructed itself. Total annual capacity of the nine furnaces is approximately 500,000 tons.

First Merchant Stack Since 1908

A new merchant blast furnace is to be built by Woodward Iron Co., Woodward, Ala.

Upon completion of this new stack, which will cost $4.5 million, the company will have four merchant iron furnaces. The new furnace will add about 180,000 tons annually to the company's capacity. The company's present three furnaces have a total annual capacity of approximately 526,000 net tons.

The new stack, which will be the first merchant iron maker built in the district since 1908, will be located adjacent to the company's No. 2 furnace.

Last year the company's three furnaces produced more than 523,000 tons of pig iron, the largest tonnage in the company's 68-year history.

New Plant for Hubbard & Co.

Rust Engineering Co., Pittsburgh, expects to complete a new building for manufacturing aluminum pole line hardware, specialties and street lighting materials for Hubbard & Co., also of Pittsburgh. The cost should be about $150,000.

The new building is of steel frame construction. It will be 70 x 360 feet; its height from floor to steel deck roof is 22 feet. Walls are of brick and corrugated aluminum siding; aluminum sash is used throughout.

Croloy Now Made in Cleveland

Henry L. Crowley Co., West Orange, N. J., expanded facilities to make Croloy at its West Orange plant and opened another plant in Cleveland. Crowley expects to offset a serious bottleneck in the powdered cores used in horizontal output transformers and deflection yokes for television sets by the moves.

Under an arrangement with Republic Steel Corp., a jointly owned company and plant was put into operation in Cleveland. It is known as Crowley-Republic Corp.

Would Make More Electrodes

National Carbon Division of Union Carbide & Carbon Corp., New York, will probably expand its electrode plant at Columbia, Tenn. The company is waiting for formal approval of an arrangement with the Tennessee Valley Authority for its power supply. National Carbon officials say the expansion will cost over $5 million and is being undertaken to meet the demand for large graphite electrodes used in the steel and metallurgical industries. The expansion would add about $350,000 to the Columbia plant's annual payroll.

The plant is being especially designed to produce large graphite electrodes: Sizes will range up to and including 40 inches in diameter and 110 inches in length. Those big ones will weigh about 7000 pounds. The company believes the plant may be producing graphite electrodes by the spring of 1951.

New Plant for Nat'l Radiator

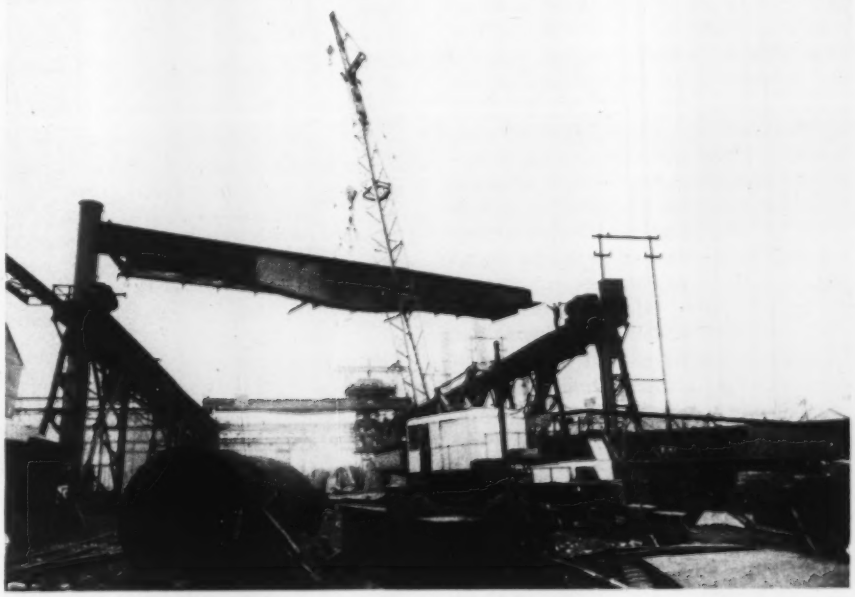
National Radiator Co., Johnstown, Pa., is building a $1 million plant near Altoona, Pa., for its sheet metal operations. The plant will employ about 300 persons and is scheduled to be in operation early next year. Transfer of some of the sheet metal operations to new location will make room for output of new products at company's Johnstown plants and expansion of research activities. Company's recent development of a number of new products, including nonferrous convectors and baseboard radiation, increased sheet metal requirements substantially beyond present capacity. Increase of plastic metals operations at Johnstown is prompting the concentration of sheet metal operations at Altoona.

GE Expands TV Tube Output

General Electric Co. will spend around $2 million for expanding its radio and television receiving tube plants in Owensboro, Ky. The company will add 117,000 square feet of floor space and new tube-making equipment. Between 500 and 600 more employees will be added.

Peerless Pump Gets Laboratory

Peerless Pump Division of Food Machinery & Chemical Corp. completed a new pump-testing laboratory at its Indianapolis Works. The installation, finished this month, cost over $250,000. It establishes a completely new set of standards in pump-testing procedures in its field of product manufacture.



DISMANTLING A STRIPPER: Eichleay Engineering Corp., Pittsburgh, uses its 45-ton rubber-tire Lorain MC820 Moto-Crane to handle a 39-ton overhead crane beam in dismantling a "stripper" at National Tube Co.'s blooming mill at Lorain, O. The overhead crane will be reconditioned and re-erected in another part of the plant as part of a plant expansion program

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Windows of Washington

By E. C. KREUTZBERG — *Washington Editor, STEEL*

The President's advisers say further expansion of steel capacity would be good business in peacetime, and now the international situation only makes the matter more urgent

CONSPICUOUS BY ITS ABSENCE in the President's midyear economic report to Congress is any proposal that the government be given authority to build steel plants if privately owned steel capacity doesn't expand fast enough for the administration.

The President based part of his report on advice from the Council of Economic Advisers to leave the steel expansion job to private industry. Help from the government is recommended only if government loans and guarantees are made necessary and as provided for in the administration's draft of the Defense Production Act of 1950.

Says the council: "The economy is in good shape to deal with increased programs (for defense) of substantial scope. But we must exert every effort to produce even more, especially of such commodities as steel." The advisers think private industry has done a very good job of expanding steel capacity to meet the country's needs, but they had something to say about still further expansion:

Effect Is Urgency—"Some thought that the nation's steel production was above a sustainable level two years ago. Since then, however, the industry has substantially enlarged its capacity and is planning further enlargement. But even before the international events of last month, the industry had been straining capacity, despite incomplete recovery of the nation from a business recession. Thus the further expansion of the steel industry would be good business even in an entirely peacetime context. The only effect of the present international situation is to make that expansion more urgent. To assume that this accelerated expansion should not be undertaken, because it might exceed the need if international tensions should subside, would neglect the vital need of today. It would be unrealistic when measured by the standards of desirable and attainable peacetime growth for the economy as a whole.

Supply & Demand — "There are other situations where capacity has lagged behind the requirements of an expanding economy. Iron ore as well as nonferrous metals are examples. The increased demand, which will be injected into the economy by enlarged defense expenditures, will be superimposed upon a great civilian demand. If that increased demand imposes an excessive strain upon supply in important areas, the most lasting solution will be for the supply to be increased. Business policy should take that into account. Some situations will occur, however, where the alternative of reducing demand will be the only immediate solution."

Security Policy Tightened Up

The Defense Department is tightening up on security policies.

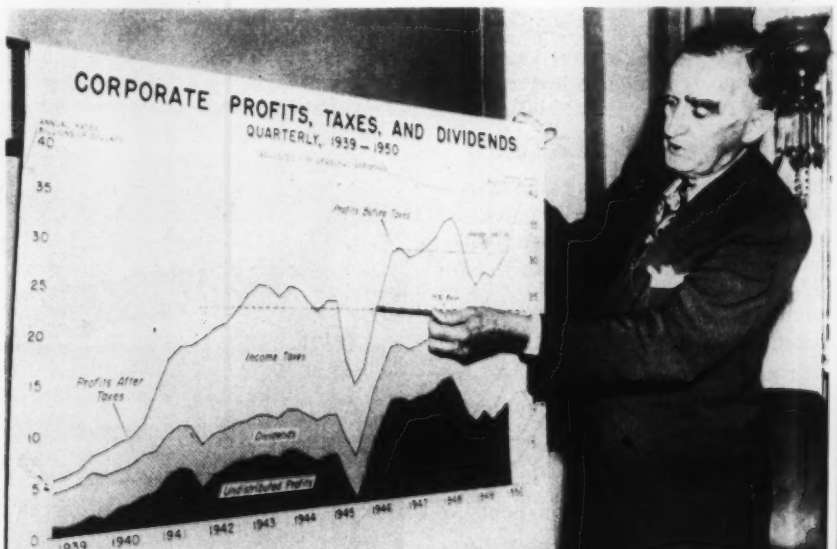
Now military contractors may release to the public without specific clearance only information of this character:

Accentuate the Positive: 1. A statement that a contract or letter of intent was received; 2. a statement that workers in certain fields which may be specified are required to meet the terms of the contract and numbers of additional personnel needed may be announced if necessary; 3. type of production may be announced in general terms (i. e., aircraft of standard types such as B-29s, F-86s, C-119s, F4Us, PBMs, etc; combat vessels, cargo vessels, tanks, trucks, ammunition, clothing, etc.) provided that the item itself is not classified; 4. information previously released.

Subcontractors and branch plants may release information of the foregoing type provided they are not the sole supplier of material essential to production by the prime contractor, arsenal or government factory, and that such information does not reveal rates of production or deliveries, quantities, performance of weapons or equipment, and that they do not disclose classified information.

Eliminate the Negative — Contractors will *not* release information of the following nature unless specifically cleared by the Security Review Branch, Office of Public Information, Department of Defense: 1. Numbers of items to be produced, production schedules, rates of delivery, future planning on production schedules or rates of delivery, as to types, quantities or dollar values; 2. information on sources of supply, and quantities and qualities of strategic or critical supplies, and movement, assembly or storage of supplies and materiel; 3. information on sabotage attempts or plant security measures.

For morale purposes it may become desirable from time to time to release information on first models of significant weapons or equipment, or oustanding production achiev-



NEA

WORKING ON THE LEVY: Sen. Joseph C. O'Mahoney (Dem., Wyo.) demanded before the Senate Finance Committee that an excess profits tax be levied now to make sure "the profiteer and the speculator" will be working for Uncle Sam. The committee held hearings on the war tax program

ments, but all such releases must be specifically cleared prior to release. The same policy governs shipments to allied governments. In cases of doubt the Security Review Branch should be asked for a ruling.

OTS Takes Over AEC Reports

From now on anyone who is interested in unclassified and declassified Atomic Energy Commission reports will have to get them from the Office of Technical Services, Commerce Department, Washington 25. AEC discontinued its Document Sales Agency at Oak Ridge, Tenn.

The reports are of interest chiefly to the chemical industry, to physicists, to researchers in biology and medicine and to the instruments industry. A small number of the reports are of significance to the metalworking industry. Lists of available reports may be obtained from OTS. The June list offers a "Bibliography on Powder Metallurgy with Emphasis on Porous Metals" that will interest metallurgists. The 26-page report, numbered AECD-2763, costs 35 cents.

"About 98 Per Cent Replied"

The House Lobby Investigating Committee, Rep. Frank Buchanan (Dem., Pa.), chairman, is turning its guns on government lobbyists. At the insistence of its Republican members, the committee sought to prove that the Agriculture Department, by having all Production & Marketing Administration representatives in Minnesota attend a meeting in St. Paul last April, at government expense, employed "coercion" in "buying" an audience to listen to a speech by Secretary Brannan. Salaries and expenses of those attending cost the government $42,000. Agriculture spokesmen denied that any pressure was exerted to force attendance.

Oscar R. Ewing, Federal Security administrator, questioned about a trip he made to European countries last December and January at government expense, said his purpose was research in educational, social security and health activities, and that his trip in no way was connected with an effort to influence Congress on pending legislation.

What is the committee going to do about Inland Steel President Clarence B. Randall's refusal to reply to the questionnaire about trips of company officials to Washington, expenses on such trips, purpose of such trips, cost of maintaining a Washington office, cost of printing and distributing material dealing with public issues, contributions to organizations concerned with public issues, etc.? Nothing. Answers were solicited on a voluntary basis, a committee spokesman told STEEL, and since Mr. Randall elected not to answer, his position is unassailable. About "98 per cent" of the 166 business corporations to which the questionnaire was sent, STEEL was told, replied.

Find Your Way

IF YOU want to find your way around in government, if you want to know what are the functions of the various executive, judicial and legislative branches and the activities of the quasi-official agencies and 22 international organizations—write to the Superintendent of Documents, Government Printing Office, Washington 25, and ask for "United States Government Manual 1950-51." Enclose $1.

The 650-page book was completed by the General Services Administration; it describes our government as of July 1, 1950. In it are the President's reorganization plans.

RFC Loans to Metalworking

RFC loans of interest to the metals industries include:

Midwest Refineries Inc., Grand Rapids, Mich., $1 million, for machinery and equipment, for six years' maturity.

Piasecki Helicopter Corp., Morton, Pa., $600,000, for plant construction, machinery, working capital and debt payment, eight years.

Albemarle Paper & Mfg. Co. and Halifax Paper Co. Inc., Richmond, Va., $5 million, for plant construction and machinery to make paper and kraft products, ten years.

R. C. Allen Business Machines Inc., Grand Rapids, Mich., $700,000, for machinery and equipment, working capital and debt payment, two years.

Clyde Porcelain Steel Corp., Clyde, O., $1.2 million for machinery and debt payment, five years.

Copper Cities Mining Co., New York, $7.5 million for construction in California and working capital, seven and a half years.

Motor Park Inc., Boston, $12 million, for building combination underground garage and bomb shelter in Boston Common, ten years.

Can Be Reached at . . .

Employers desiring to write to or telephone individual labor leaders will find their full names, addresses and phone numbers in the Labor Department's new "Directory of Labor Unions in the United States, 1950." It lists 209 international unions representing 14 to 16 million workers, and all their principal officers. It also lists information on locals, frequency of conventions, publications and their editors, directors of research and education departments, etc. The book may be purchased for 25 cents from the Superintendent of Documents, United States Government Printing Office, Washington 25.

Smith Named to NSRB

C. R. Smith, president, American Airlines, was appointed special consultant on transportation to the National Security Resources Board. During World War II he served as a major general in the Army Air Forces as deputy commander of the Air Transport Command.

Steel Mill for Venezuela

Venezuela hopes to see its own steel plant started sometime next year: Corporacion Venezolana de Fomento, Caracas, signed a contract with Salem Engineering Co.'s Toronto, Ont., office for a survey to be finished by yearend.

The Venezuelan embassy in Washington says present plans are for producing 200 tons of ingots daily "and the manufacture of simple building materials." The projected site of the plant is on the Orinoco river near the Guayana iron ore field. It will be served by hydroelectric power, by gas from the eastern Venezuelan oil field and will have water transportation facilities.

Present plans resulted from a Venezuelan visit to Sweden in 1948. Because it isn't possible to get high-grade coke from Venezuelan coal, the Venezuelan commission was told that the Wiborg-Soderfors iron reduction process would work best. After the visit "highly satisfactory" tests were run in Canada and Sweden with samples of Venezuelan ore. U. S. Bureau of Mines and the Ontario Research Foundation co-operated.

Corporation Venezolana is thinking about negotiating a loan from the Export-Import Bank of Washington but is "rather inclined" to use its own capital.

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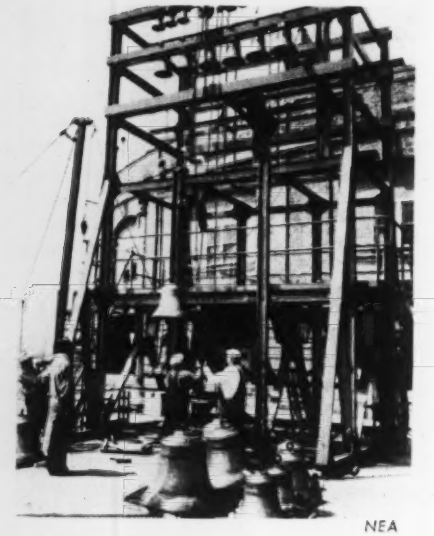


NEA

← RING OUT THE NEWS: United States' first International Trade Fair opened in Chicago last week. The bells in the carillon rang out the good news. Ranging from 20 pounds for the small ones to 2000 pounds for the large ones, the 35 bells were shipped from Holland. After the fair they will go to Quebec where they will be set up permanently

ON THE SQUARE—This photo and caption material is supplied from a Soviet source: A tall office building is under construction in Moscow. It is situated in Smolensky Square →

NEA

European Capital Expenditures Mount

Great Britain is spending $6.2 billion on improvements this year. Spurred by the Korean war, capital expenditures in other ECA countries also increase

GREAT BRITAIN is spending $6.2 billion on industrial capital expansions this year. Of that, $1260 million will be used to re-equip and modernize manufacturing industries, including iron and steel. An additional $658 million will go to power and fuel industries—half for electricity and the rest divided among coal, coke, gas and oil.

Mr. Big—The largest metalworking project is the $168 million steelworks at Margam in South Wales. When completed in 1952, its yearly output will include more than 335,000 tons of finished sheet and 390,000 tons of tin plate.

The nationalized electricity industry plans to build 47 new power stations in the next five years. Electric power consumption is now double what it was in 1939. The petroleum industry expansions include five new oil refineries to be in full operation by the beginning of 1952. Two others will be started this fall. Some of the expansion funds for the coal industry will go into development of newly discovered coal seams in Staffordshire in the center of Britain. Reserves in the new field total an estimated 200 million tons.

Foot in the Door—The capital expansions will help Britain keep its steadily improving export position. Devaluation was an impetus to British trade late last and early this year. Now, the Korean war is still more help, particularly because U. S. industry can give less and less attention to exports. The U. K. is cashing in, especially in Canada where British steel is rapidly supplanting the U. S. product.

British iron and steel exports to Canada this year will be worth $5 million, almost double last year's imports of $2,629,000 from England. Actually the volume is more than double since British prices fell because of devaluation. Steel shipments from the U. S. to Canada are down to about the same extent as shipments from Britain are up.

Same Story—The trend in British steel exports to Canada is matched in other commodities. Imports of nonferrous metals from Britain are up from $2,002,000 to $4,564,000; coal imports from 163,000 tons to 306,000 tons; imports of electrical goods from $2.1 million to $3.9 million.

French Steel Exports Perk Up

Less American competition is also helping French steel exports, particularly to South America. U. S. firms are even buying in France because delivery dates on semifinished and pig iron are short.

French finishing capacity is still inadequate, and the steel industry is concentrating most of its expansion activities on that phase of operations.

Another metalworking expansion program will be in the zinc and lead producing industry. ECA will advance $4 million in counterpart fund francs to Societe des Mines de Zellidja to modernize and expand a zinc and lead producing mine at Bou-Baker in eastern French Morocco.

In addition to the counterpart fund francs, ECA under a previous agreement is also advancing $3.6 million to the company through Newmond Mining Corp., New York, an affiliate of Zellidja. The Moroccan company will also spend about $8,570,000 of its own funds on the program, making a total investment of the equivalent of about $16.2 million. After the Zellidja mine program is completed, its annual output will reach an estimated 85,000 and 120,000 tons of lead and zinc concentrates, respectively. The expansion will help France become self-sufficient in the two metals.

The Zellidja contract is one of a series being executed by ECA to cooperate with the governments of Marshall Plan countries in the development abroad of materials in which U. S. resources are deficient.

Italy To Get Zinc Plant

ECA will advance the lire equivalent of $1,494,180 to an Italian mining company for the construction of an electrolytic zinc plant at Nossa.

The money will come from the five per cent portion of Italian counterpart funds reserved for use by the U. S. to purchase deficiency materials abroad. The funds will be repaid over 11 years in deliveries of zinc or lead metals to the U. S. stockpiles.

The new plant will exploit low-grade oxidized zinc ores of the Corno and Oltro il Colle mines in northern Italy, owned and operated by Societa Per Azioni Piombo E Zinco (SAPEZ). The plant is expected to produce 10,000 tons of high-grade zinc and another 10,000 tons of sulphuric acid.

That production figure includes about 3500 tons of zinc now being lost in "mill tailings."

SAPEZ plans to sell 50 per cent of the new plant's zinc production in Milan—chief metal market in Italy—and to export the rest.

Norwegian Mining Revives

Norway's largest iron mining company, A/S Sydvaranger, is spending $25.2 million to modernize and repair wartime damage to its properties at Kirkenes in northern Norway.

Sydvaranger hopes to start production at the rate of 500,000 tons of ore for export by the end of 1951, and at the rate of 1 million tons in 1952. Norway's total output of iron ore last year was about 375,000 tons.

Sydvaranger will supply part of the ore for the new Mo in Rana steel plant in northern Norway. The first pig iron furnace will be operating by 1952. Two more will be ready in 1954. The plant, to be the biggest in Norway, will be powered entirely by electricity. Power will be supplied from the hydroelectric plant being built at Rossaga about 25 miles to the south.

Norway's industrial production is rising and is now more than 50 per cent above the 1938 level. Mining, electrochemical, canning and wood processing industries show the most marked gains. About one third of Norway's population now gets its income from industry.

Dutch Steel Imports Hold

The Netherlands continues to be the largest importer of iron and steel products in Europe. Imports now are at the rate of 1,120,000 tons per year. Belgium and Luxemburg account for about 71.5 per cent of that. The U.K., Western Germany and France are the other chief suppliers.

Austria Builds New Mill

Austria's Alpine-Montan Gesellshaft will build a rail and structural steel mill to produce 165,000 tons per year. ECA will contribute about $2 million toward the $6.1 million plant. The facility will replace two older units.

For Sale: Aluminum Plant

Want to buy a primary aluminum plant? The Department of State's Lend-Lease and Surplus Property Staff will be taking bids on one until Sept. 26. It was part of the equipment of Vereinigte Aluminium-Werke A. G. at Toeging AM INN, Bavaria, Germany, and was awarded to the U. S. by the Inter-Allied Reparation Agency.

The equipment comprises, among other things, about 160 units of aluminum pot-line equipment with an estimated yearly productive capacity of nearly 20,000 net tons of pig aluminum.

Korea Narrows Trade Gap

The war may accentuate a trend already started to boost U. S. imports and lower exports

THE KOREAN war may solve one economic problem: The excess of U. S. exports over imports. The trade gap was narrowing even before the Korean outburst, and the Red aggression promises to accentuate the trend.

Why? Because American industry can no longer devote as much attention to foreign trade; because the federal government is tightening up on exports again; and because we are importing more strategic materials. In the past few months imports of industrial diamonds from the Union of South Africa, iron ore from Canada and tin bars and blocks from British Malaya have increased markedly.

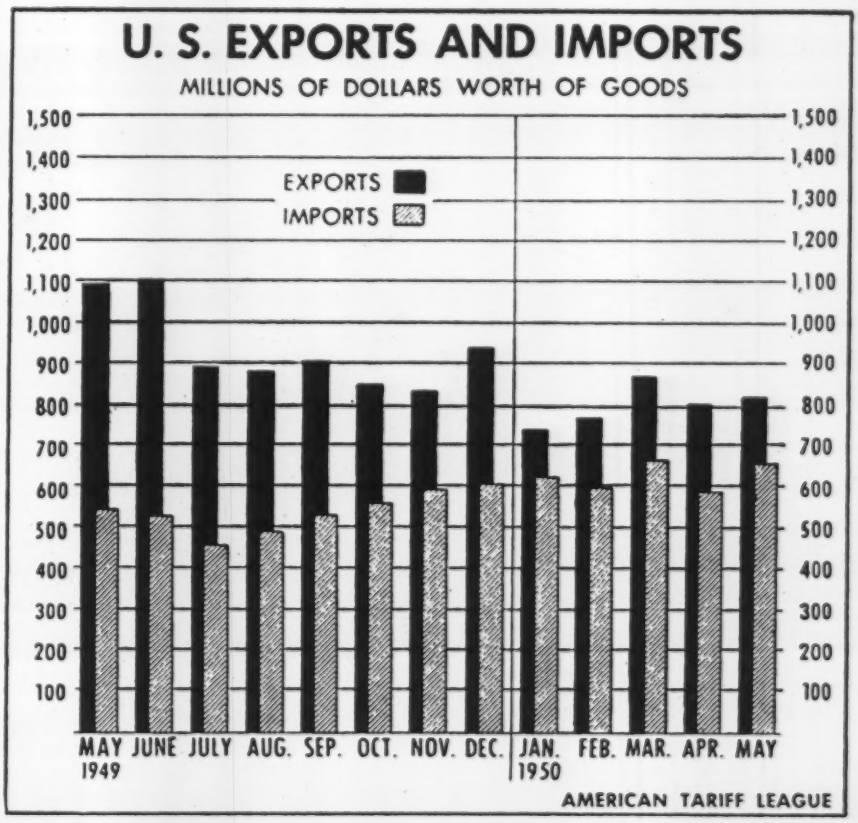
Up and Down—General imports for the first five months of 1950 totaled $3,130,200,000, representing a 9 per cent increase over the January-May, 1949, figure of $2,864,300,000. U. S. exports amounted to $4,021,300,000 during January-May, 1950, and were 28 per cent below the corresponding five-month total of $5,582,500,000 in 1949 (see the chart).

On the basis of preliminary Department of Commerce statistics for January-May, 1950, U. S. general imports were averaging an annual total of $7.5 billion, compared with last year's annual figure of $6623 million. Total exports were running at a yearly rate of $9.7 billion as against $12,004 million in 1949. That would leave a 1950 trade gap of $2.2 billion, 59 per cent narrower than the 1949 imbalance of $5381 million.

ECA Helps in Korean War

The Economic Cooperation Administration is coming in handy in the Korean war. Strictly a civilian agency, it nevertheless has been able to get strategic materials to the fighting forces in Korea. Some comes from Australia and Japan.

ECA has 25 people in Korea and 16 in Tokyo who are helping run the beleaguered nation's communications, transport and power facilities. The agency is diverting to war-aid uses the $36 million originally allotted the nation for industrial and agricultural development. Congress is considering an additional $100 million in ECA funds for Korea.



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KEEPING PACE WITH TIME . . .

Bullard Mult-Au-Matics

at Spicer Manufacturing Division of Dana Corporation, Toledo, Ohio

Some 30 Mult-Au-Matics — eight spindle type, in 12 and 16 inch sizes, produce a variety of automotive parts. Naturally these machines were installed because of their productive capacity. Since, one Mult-Au-Matic produces the equivalent of three former machines which it replaced. Furthermore, the customer expressed satisfaction with the dependable performance of these machines and remarked on the economies possible with Mult-Au-Matics.

Write BULLARD for Factual Time Savings on your Jobs

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Automobile companies not only produce automobiles—they are big payers and big collectors of taxes. Chrysler pays $16 million in excise taxes for June alone

DETROIT

TAXES, TAXES, TAXES—and no relief in sight for corporations which have been paying stiff imposts ever since 1942 and now face even higher rates.

An indication of the part one company in the U. S. is playing in supplying tax dollars was shown recently when Chrysler Corp. turned over to the government $16 million for excise payments for the month of June. This was not only the largest excise tax payment for one month in company history, but also as much as the company paid during the entire year 1938 or 1939, and more than half of what was paid in the prewar record year of 1941.

Bigger Bites — Taxes have been playing a continuously larger part in the cost of new passenger cars and trucks. For instance, during the 1939-1941 prewar years, when Chrysler sold 2,851,000 vehicles, it paid $151 million in taxes, while during the three postwar years 1947-1949, with only about 13 per cent more vehicles produced, total taxes paid were $536 million, or better than triple the prewar bill.

Relationship of profits to tax payments is equally striking. During the last ten years, Chrysler paid more than $870 million in taxes as compared with a net profit during the period of $494,479,000. Not only that, but the millions of entries and notations necessary to keep tax records and make out tax forms cost Chrysler approximately $500,000 a year. The work required the preparation and filing during 1949 alone of more than 255,000 separate tax forms and returns.

Collects for Uncle Sam—In addition to the taxes it pays, a company like Chrysler is also a large tax collector for the government. During 1949 the corporation collected from its employees more than $30 million in income withholding and old-age taxes, and turned this amount over to the government. Furthermore, a large staff is maintained to prepare and issue savings bonds purchased by employees. During 1949, more than 387,000 individual bonds were purchased with maturity value of $12,300,000. Since July, 1941, when the corporation began to provide this service for its employees, and through June 30 of this year, it sold and processed 6,161,379 bonds with a total maturity value of $201,754,575.

Good News — Taxes or no taxes, General Motors Corp. was able to give good news to its 430,000 stockholders in the form of an extra $2.50 per share dividend. Earnings for the first half soared to a record $10.90 per share, making earlier predictions of a $20 per share earning rate for the full year look fully justified. For the first time in history GM unit sales of cars and trucks topped 1 million units for a three-month period and brought the total for the first half of the year to 1,878,630.

GM has always believed in a liberal dividend policy, as exemplified by payments in prewar years. Earnings and dividends naturally were limited during the war, and in the four years since it was necessary to retain in the business a much higher percentage of earnings than prior to 1942 because of increased capital requirements for plant facilities and working capital. As a result, income of the investor group did not keep pace with other income groups, a deficiency now well on the way toward being corrected.

'Not Our Business, Mr. Reuther'

Shortly after the start of the Korean hostilities, Walter P. Reuther, president of the UAW-CIO wrote the presidents of all motor companies, seeking a "conference" with them to discuss the possible impact of military production on civilian goods production, and in particular to review some means of "forcing" the steel industry to increase its capacity to avoid unemployment in motor plants because of a steel shortage. His request drew little interest, although both General Motors and Chrysler eventually replied by letter.

A portion of the letter from H. L. Weckler of Chrysler is of interest. He wrote . . "It does not seem to us that a collective movement on the

INNOVATION: 1951 Kaiser sedans have single-piece die-cast aluminum garnish moldings. Here one is being mounted in a rear door window. Increased rigidity of the cast section, as compared with rolled and welded thin-gage steel, makes fewer mounting screws necessary—one at each end in the base of the molding and five through the unexposed upper edge of the door. Cost of the die-cast molding is slightly less than rolled steel, fit is claimed to be better, installation time is reduced. Castings are furnished by Doehler-Jarvis Corp.

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part of the automotive industry, either with or without the collaboration of your organization, aimed at encouraging the government to take over the steel business would be constructive. We believe the people responsible for the operation of the steel industry are as patriotically devoted to this country's interests as either you or ourselves. They should be more competent than we to deal with such problems in their field as the evolving situation may present."

And C. E. Wilson, president of General Motors, took a similar vein. . . "I am sure you recognize, as I do, that the problems of other industries are not necessarily similar to those in the automobile industry, nor are the problems of all producers in the automobile industry identical. I doubt that any large group conference such as you suggest would be of assistance to our government in this emergency or help solve the problems for our employees and ourselves." So Mr. Reuther's latest proposal dropped with a dull thud.

Eight Ways to Labor Harmony

In a recent discussion of just how management and labor might get along better in a complex society, John S. Bugas, vice president-industrial relations, Ford Motor Co., made eight good suggestions, as follows:

1. Both management and labor must be represented by people who have the full confidence of their principals and who can speak with authority; 2. management and labor must be legally and morally responsible for their commitments and demonstrate a high degree of integrity; 3. both sides must have the desire and the facilities to search out as many facts and figures as can be applied to the business at hand; 4. both parties must recognize the proper functions of the other; 5. both parties should avoid reliance upon government aid in seeking to reach agreement on issues; 6. both company and union must exercise their right to address both employees and the public without resort to inflammatory statements, half-truths or distortions of the truth; 7. both management and labor must refrain not only from the use of economic force but also from the threat of its use until all alternatives have been literally exhausted; and 8. a more statesmanlike approach to their problems is needed by leaders of both management and labor.

All-Electric Window Arrives

First all-electric window lift to be offered as standard equipment on U. S. automobiles has been developed by Chrysler for its Imperial models. In most power-lift systems, hydraulic fluid, tubing, flexible hydraulic connections and a central motor-pump power unit are necessary. A break or leak in any part of the system forces complete failure.

The electric setup is less complicated to install and service, since each door contains its own complete unit and individual motor. Power requirements are insignificant. For example, to raise or lower a window once, requires power equivalent to only one-fourth that of one use of the cigaret lighter, or to playing the radio for seven seconds.

Each unit is housed within the panel below a window, and a button switch on the upper part of the door panel controls the motor. In addition to individual control buttons on each door, there is also a master control panel on the left front door which enables the driver to manipulate all windows from behind the wheel.

Basic components of the lift are a small reversing electric motor, a screw-and-nut drive, a bell crank, a combination relay-circuit breaker unit and an operating switch. The motor is mounted on the end of a fixed steel frame and is directly connected to a screw shaft within the frame. When the motor turns the screw, the nut with a slider attachment travels along the shaft, the slider being guided by the v-ways of the frame.

A pulley-like bearing attached to the slider-nut assembly engages the slotted lower leg of the bell crank and transmits the drive movement to this unit. The boomerang-shaped bell crank is held at its center in a fixed pivot, with the upper leg engaging a slotted guide on the base of the window channel. As the lower leg is pushed forward and up by the action of the screw-and-nut assembly, the upper leg is pulled across and down, bringing the window along with it. The frame and motor assembly is about 21½ inches long, with motor diameter of 3 inches. All metal parts are either painted or cadmium plated for corrosion protection.

Auto, Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	732,161	508,101
June	897,864	523,689
Six Months	3,941,883	3,034,055
July	751,300*	604,351
August		678,092
September		657,073
October		601,021
November		474,731
December		384,318
Total		6,533,641

Weekly Estimates

Week Ended	1950	1949
July 22	187,339	160,173
July 29	191,978	138,727
Aug. 5	173,930	145,596
Aug. 12	170,000	146,317

Estimates by Ward's Automotive Reports

* Preliminary.

Windows—a Shade Different

A new safety plate glass which reduces sun glare and also the amount of heat which enters an automobile through window glass has been announced as optional on two lines of Buick models.

The glass, known as E-Z-Eye, has a slightly bluish-green tint which results from chemicals mixed into it during manufacture. It is claimed to exclude at least half of the radiant heat normally penetrating window glass, and in addition cuts off a large portion of the sun's ultraviolet rays, thereby reducing upholstery fading.

A special feature has been added to the glass used in windshields. Across the top of the windshield there is a shaded green area which cuts down glare, making outside sun visors unnecessary. Experiments with shaded glass of this type have been under way for several years, a major problem being to avoid a sharp line of demarcation where the shading begins.

Ford Assets Gain

Ford has filed its annual report with the Massachusetts state tax commissioner, showing assets as of Dec. 31, 1949, at $1,343,349,000, or up nearly $200 million from the year previous. This is the only financial statement issued by the company and doesn't give much of a clue to profit from operations. One notable feature is a drop in surplus from $809,750,000 to $464,412,000, which could indicate the degree of investment in plant and equipment which the company made during 1949.

Mercury Rises

In seven months of this year more Mercury models have been built than in any similar period in the car's history, total production through July being 192,941, compared with 203,339 for all of last year.

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Centerless grinding is available where a higher degree of size accuracy or finer surface is required.

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Tulsa, Oklahoma

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Cleveland, Ohio

7251 General Motors Building
Detroit, Michigan

403 W. Eighth Street
Los Angeles 14, California

528 Fisher Building
Detroit, Michigan

3104 Smith Tower
Seattle, Washington

Monadnock Building
San Francisco 5, Calif.

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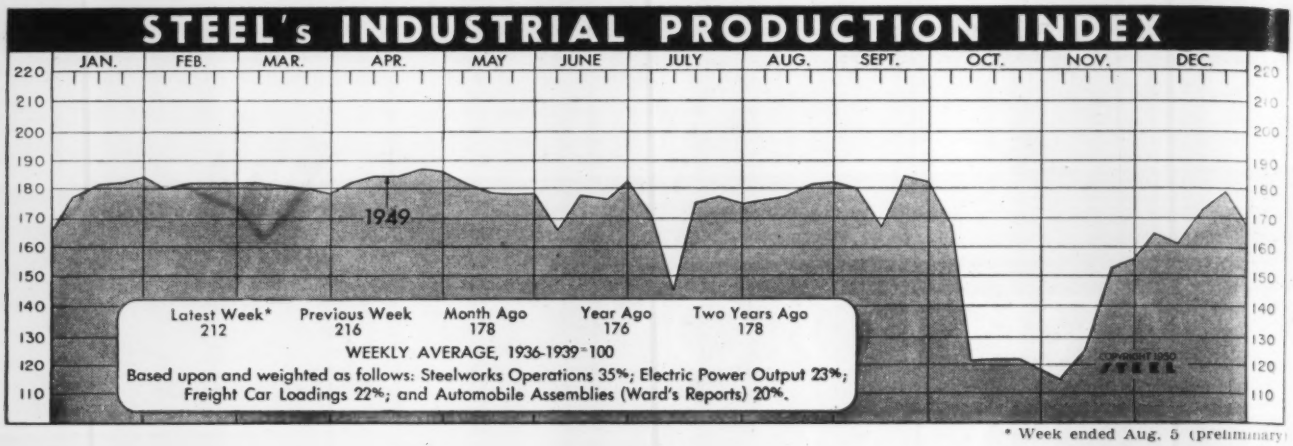
STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110
1949
Latest Week* 212
Previous Week 216
Month Ago 178
Year Ago 176
Two Years Ago 178
WEEKLY AVERAGE, 1936-1939=100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
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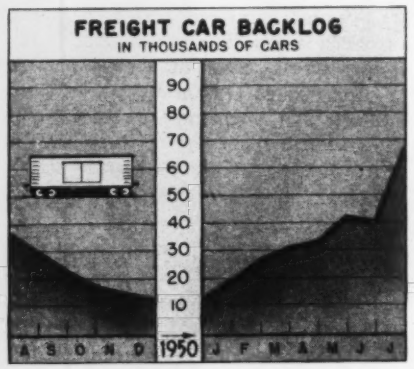
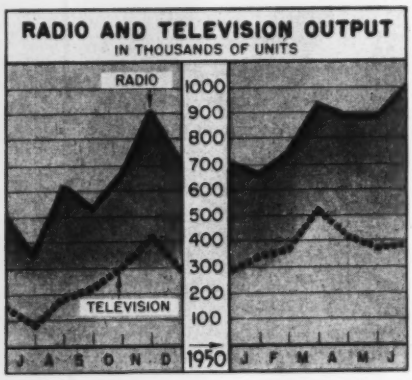
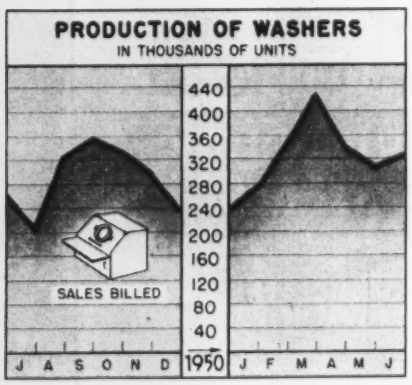
* Week ended Aug. 5 (preliminary)




RADIO AND TELEVISION OUTPUT
IN THOUSANDS OF UNITS
RADIO
TELEVISION
1000 900 800 700 600 500 400 300 200 100
J A S O N D 1950 J F M A M J



Charts—Copyright 1950, STEEL

Freight Car Awards and Backlogs

	Awards		Backlogs*	
	1950	1949	1950	1949
Jan.	9,385	1,663	19,026	96,214
Feb.	9,075	332	26,055	85,974
Mar.	6,201	199	30,539	73,188
Apr.	3,308	30	32,857	62,569
May	11,636	589	42,300	52,281
June	2,195	153	40,585	42,813
July	30,065	408	67,084	36,564
Aug.	....	185	.....	28,731
Sept.	....	123	.....	22,203
Oct.	....	201	.....	17,377
Nov.	....	1,145	.....	14,146
Dec.	....	1,220	.....	12,036
Total	....	6,248		

*End of month.

American Railway Car Institute

Radio and Television Output

Thousands of Units

	Radio		Television	
	1950	1949	1950	1949
Jan.	660	710	336	121
Feb.	750	598	367	119
Mar.	980	679	525	182
Apr.	883	506	420	167
May	883	478	376	163
June	1,054	512	389	161
July	...	342	...	80
Aug.	...	623	...	186
Sept.	...	532	...	225
Oct.	...	670	...	305
Nov.	...	910	...	414
Dec.	...	707	...	292
Total	...	7,247	...	2,414

Radio-Television Mfrs. Assoc.

Household Washers

Sales Billed—Units

	1950	1949	1948
Jan.	275,576	172,400	360,445
Feb.	342,967	201,300	367,909
Mar.	423,802	242,500	408,512
Apr.	333,072	192,500	402,257
May	304,640	211,700	377,895
June	325,217	260,700	392,496
July	.....	200,900	326,181
Aug.	.....	323,789	362,169
Sept.	.....	357,281	433,919
Oct.	.....	333,728	382,400
Nov.	.....	298,717	319,300
Dec.	.....	237,591	183,700
Totals	.....	3,033,106	4,317,183

American Washer & Ironer Mfrs. Assoc.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Construction July24	Gear Sales Aug.7	Refrigerators July31
Durable Goods July24	Ironers July17	Steel Cast. July24
Employ., Metalwkg.June19	Machine Tools July31	Steel Forgings Aug.7
Employ. Steel July24	Malleable Cast. July24	Steel Shipments ...July24
Fab. Struc. Steel ..Aug.7	Price Indexes July31	Trucks, Elec. Ind...Jan.2
Foundry Equip. ..Aug.7	Purchasing Power..July31	Vacuum Cleaners ..July31
Gear Sales Aug.7	Ranges, Elec. July31	Wages, Metalwkg...June19
Gray Iron Cast....Aug.7	Ranges, Gas. July10	Water Heaters July10

Freight Cars Start To Roll

Domestic freight car orders in July jumped almost 28,000 over those of a month earlier as the railroads' freight car buying orders started to roll.

The American Railway Car Institute reports the railroads' July orders totaled 30,065, the largest monthly figure since 1924. Independent car builders got 19,490 and 10,575 went to railroad shops. Total orders in June were 2195 and in July, 1949, they amounted to a mere trickle of 408.

Deliveries of freight cars showed the effect of vacation shutdowns in July as they declined to 3464. In the next few months deliveries will pick up headway as builders aim for output totals reached in the early months of 1949.

Backlogs are higher than they have been for a long time. On Aug. 1 the total was 67,084; 441,236 were on car builders' books and the remaining 25,848 were to be built by railroad shops. On July 1 the backlog was 40,585 and on Aug. 1, 1949, it was 36,564.

Radio-TV Makers Doing Well

Television receiver production in the first half of 1950 equaled that for all 1949 and radio output was up 50 per cent, says the Radio-Television Manufacturers' Association. Members of the association report the manufacture of 2,413,145 TV sets, 3,859,712 home radios and 1,377,458 automobile sets in the first six months this year.

Television outturn rose to 388,962 in June from 376,227 in May but the average weekly rate was down because of plant closings for vacations.

June's home radio production, including portables, was 784,108 units and automobile sets added another 270,348 units.

The Business Trend

Output remains in the stratosphere as industry launches a last fling at all-out civilian production before higher taxes, controls and more defense orders interfere

INDUSTRIAL production is riding high even though the worst of the war-scare buying is over and arms output is not yet significant. Industry is having a fling at what may be the last chance for all-out civilian production.

STEEL's industrial production index for the week ended Aug. 5 fell a little to 212 per cent of the 1936-1939 average, compared with 216 per cent the previous week, but the rate is still in the stratosphere. A year ago it was at 167.

Department store sales are still 40 per cent or more above what they were last year, but they're leveling off from the scare-buying peak for the week ended July 22 when they were up 46 per cent. Highest department store sales are in the Cleveland and Philadelphia districts where buying is still about 50 per cent above what it was a year ago.

Industry wants to crowd in all the peacetime production it can manage immediately, because it reasons that by a year from now it may be turning out military goods at the rate of $16 billion to $20 billion worth a year. That includes materials for stockpiling, foreign arms aid and our own Defense Department.

Industry also wants to get in under the wire before higher taxes or consumer and real estate credit controls are clamped.

Auto Output Slips . . .

Heat walkouts, labor disputes at some suppliers and parts shortages dropped the auto and truck production in U. S. and Canada to 173,930 for the week ended Aug. 5. The decrease is the chief reason for the decline in STEEL's index.

Despite those factors, truck production may hit an alltime record in August of about 140,000 assemblies, topping the previous peak of 138,479 reached in March, 1948. The Korean war, of course, is responsible for the rush to buy the vehicles. Auto manufacturers are concentrating more on trucks because they believe that credit controls will not be as severe for that type of vehicle as for cars.

Military truck orders are likely to be increased later in the year. Any steel allocation program will probably insure the metal for truck production even if passenger car output should have to be curtailed.

Steel Rate High . . .

The steel ingot rate for the week ended Aug. 5 stayed at 99.5 per cent of capacity, but steel supplies grow tighter. If the present rate of production could be maintained 52 weeks a year, 100.5 million tons of ingots would be turned out.

Only a minor tonnage of the steel now being made is going to the military.

Prices Rise . . .

Consumers' prices rose 1.3 per cent from June to July, says the National Industrial Conference Board. Surveying the price situation in ten major U. S. cities three weeks after the

	LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
Steel Ingot Output (per cent of capacity)†	99.5	98.5	94.0	81.5
Electric Power Distributed (million kilowatt hours)	6,247	6,190	5,380	5,466
Bituminous Coal Production (daily av.—1000 tons)	1,785	1,867	1,693	1,275
Petroleum Production (daily av.—1000 bbl.)	5,640	5,522	5,475	4,721
Construction Volume (ENR—Unit $1,000,000)	$209.3	$252.5	$214.4	$239.2
Automobile and Truck Output (Ward's—number units)	173,930	191,978	137,731	142,718
*Dates on request. †1950 weekly capacity is 1,926,803 net tons. 1949 weekly capacity was 1,843,516 net tons.				
Freight Car Loadings (Unit—1000 cars)	850†	845	554	717
Business Failures (Dun & Bradstreet, number)	168	160	138	171
Money in Circulation (in millions of dollars)‡	$27,000	$26,915	$27,315	$27,419
Department Store Sales (changes from like wk. a yr. ago)‡	+42%	+46%	+10%	−11%
†Preliminary. ‡Federal Reserve Board.				
Bank Clearings (Dun & Bradstreet—millions)	$15,257	$14,222	$13,031	$12,600
Federal Gross Debt (billions)	$257.6	$257.4	$257.2	$254.2
Bond Volume, NYSE (millions)	$20.7	$33.7	$16.0	$17.1
Stocks Sales, NYSE (thousands of shares)	8,803	11,876	6,374	5,280
Loans and Investments (billions)†	$68.0	$67.9	$68.0	$63.5
United States Gov't. Obligations Held (millions)†	$35,727	$36,222	$36,638	$35,590
†Member banks, Federal Reserve System.				
STEEL's Weighted Finished Steel Price Index††	156.69	156.69	156.69	152.52
STEEL's Nonferrous Metal Price Index‡	194.9	194.2	184.0	179.1
All Commodities†	165.1	163.7	159.0	153.0
Metals and Metal Products†	173.9	173.5	173.0	168.2
†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				

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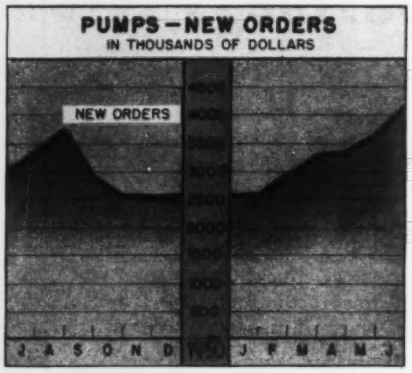
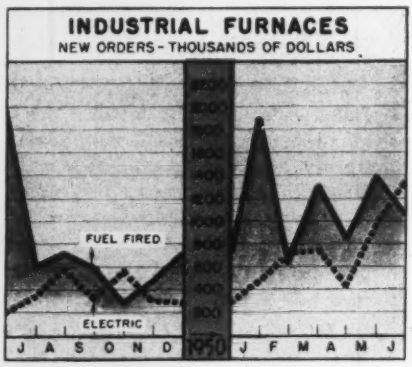


Pumps, New Orders

In Thousands of Dollars

	1950	1949	1948
Jan.	2,586	3,390	3,819
Feb.	2,938	3,247	3,635
Mar.	3,313	3,593	4,703
Apr.	3,376	2,699	4,312
May	3,668	2,775	3,724
June	4,153	3,019	3,512
July	....	3,358	4,075
Aug.	....	3,767	4,520
Sept.	....	2,914	3,474
Oct.	....	2,539	3,571
Nov.	....	5,525	3,580
Dec.	....	2,560	4,263
Total	....	36,386	47,188

Hydraulic Institute

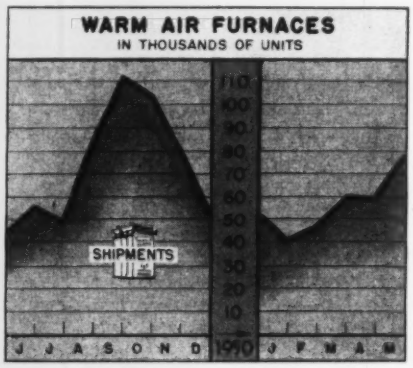


Industrial Furnaces

New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1950	1949	1950	1949
Jan.	1,914	1,047	473	948
Feb.	616	636	697	402
Mar.	1,299	305	753	436
Apr.	837	322	415	543
May	1,392	438	982	762
June	1,047	1,978	1,328	196
July	....	594	...	329
Aug.	....	706	...	589
Sept.	....	589	...	318
Oct.	....	269	...	565
Nov.	....	464	...	293
Dec.	....	718	...	281

* Except for hot rolling steel.
Industrial Furnace Mfrs. Assn.



Warm Air Furnaces

Shipments in Units

	1950	1949	1948
Jan.	39,887	31,855	46,558
Feb.	45,618	33,125	36,345
Mar.	59,982	41,376	39,297
Apr.	58,798	34,595	45,597
May	78,349	42,427	55,473
June	.....	55,857	64,724
July	.....	48,551	57,292
Aug.	.....	84,250	92,011
Sept.	.....	111,582	103,566
Oct.	.....	102,989	107,024
Nov.	.....	78,828	77,498
Dec.	.....	51,766	51,163

Bureau of the Census

Charts—Copyright, 1950, STEEL

beginning of the Korean war, as compared with prices on June 15, the board notes that rising food prices have led the advance.

Fuel is up 0.5 per cent, housing 0.4 per cent, house furnishings 0.3 per cent.

The increase in consumers' prices from June 15 to July 15 boosted living costs to within 2 per cent of the postwar high in August, 1948. The board's index for July, 1950, stood at 163.0. In June, 1950, it was 160.9, and a year ago it was 160.4. Base date for the series is January, 1939, as 100.

Wholesalers' Sales Up . . .

Sales of service and limited-function wholesalers totaled $5751 million in June, says the Office of Business Economics, Department of Commerce. After adjustment for seasonal variation, those sales were 5 per cent above May.

Sales of wholesalers of durable goods were $2149 million in June, an increase of 6 per cent over the previous month after allowance for seasonal factors. Large gains over May were shown by wholesalers of building materials, hardware, machinery, metals and automotive equipment. Sales of dealers in electrical goods showed little change.

Wholesalers' sales of nondurable goods were $3602 million in June, 4 per cent above May.

Wholesalers' inventories at the end of June were estimated at $7214 million, little changed from May levels. Durable stocks rose, but nondurable inventories fell.

No Ceilings—Yet

New construction outlays reached a record $2.6 billion in July, 25 per cent above last year

EXPENDITURES on new construction reached the unprecedented monthly total of more than $2.6 billion in July, according to preliminary estimates of the Construction Division, Department of Commerce and the Labor Department's Bureau of Labor Statistics. The July figure topped the June level by 6 per cent and the July, 1949, level by 25 per cent.

Supported by the large volume of house construction in progress, total private construction in July advanced to $1960 million, 6 per cent above June and 32 per cent above July, 1949. July's expenditures on new dwelling units, comprising 57 per cent of all outlays on private construction, rose to $1110 million, compared with $1030 million in June and $659 million in July, 1949.

Onward and Upward — Construction of new industrial plants continued to expand, the value of work put in place last month exceeding the July, 1949, total by 15 per cent. Construction of warehouses, office and loft buildings, stores, restaurants and garages also increased. Private hospital construction expenditures in July were up 76 per cent over July, 1949.

Although both farm and public utility building activities in July were higher than in June, they were below the July, 1949, levels.

More Roads—Outlays for total public construction rose to $693 million, largely because of a 10 per cent increase in expenditures for highway construction. Slight gains from June to July were recorded in educational and institutional building, and in conservation and development construction. Those categories were much higher in July this year than in July, 1949.

Total new construction valued at $14.4 billion was started in the first seven months of 1950, 19 per cent more than was started in the same 1949 period.

A Roof Over Your Head—Private construction expenditures from January through July this year advanced to almost $10.8 billion, surpassing last year's level for the same months by 23 per cent. Outlays for new dwelling units were up by 60 per cent, totaling more than $5.8 billion, but industrial, farm and public utility expenditures were a little less than in the first seven months of 1949.

In the January-July period, public expenditures in 1950 were 10 per cent

ahead of 1949. Chief increases were in construction of highways, educational buildings and conservation and development work.

Backlog High, Help's the Hitch

Surge in new orders being placed for machine tools puts National Acme Co.'s backlog at its highest point since 1945. The backlog is equal to seven or eight months' operations at the current rate, which is 40 per cent ahead of a year ago. Demand for machine tools will push the production rate up to 50 per cent above a year ago in the near future.

Knottiest problem right now is the tightening supply of skilled workers. Although National Acme is working two turns the second shift is only a partial one and so the first turn is kept two hours overtime to speed production.

More Wells, More Business

High rate of business activity and the troubled international picture are making good business for National Supply Co., Pittsburgh, producer of oil field machinery and equipment.

Early this year the company did not see encouraging prospects but since then business activity has soared to alltime highs, increasing the need for petroleum products. On top of that, the outbreak of the Korean war has boosted the needs for petroleum and stimulated efforts to bolster the domestic oil supplies.

War Lengthens Work Week

Increased demands for military and commercial equipment have pushed the instrument division of Bausch & Lomb Optical Co., Rochester, N. Y., up to a 48-hour week basis.

The extended week applies to departments producing and assembling optical gunfire control equipment for the military services.

Demands for military products have increased considerably in recent weeks, the company says, and as a result it has rehired many former employees who have had experience in military goods production.

Military Orders Increasing

Standard-Thomson Corp., Dayton, O., has received an "increasing amount" of military orders in the last month.

Climbing are its sales of aircraft instruments, particularly in the large bellows field for jet engine exhausts. A new liquid type of cooler has been accepted by the aircraft industry and is now in volume production.

Enough Power for War

Electric utilities in the U. S. will generate 310 billion kwhr this year, 118.5 per cent above 1940

THE NATION has enough electric power for war. An alltime record of at least 310 billion kwhr will be generated in 1950 by private, government and rural co-operative utilities contributing to the public supply.

That 310-billion figure is 6.5 per cent more than was generated in 1949, 118.5 per cent more than in 1940 and 686.7 per cent more than in 1920 (see the chart). The 1950 estimate is conservative because in the past few weeks utilities have been generating at an annual rate of over 320 billion kwhr. For the week ended Aug. 5, a record 6247 million kwhr were generated, surpassing the previous record set the week before of 6190 million kwhr.

Electricity in the Home—Surprisingly, residential demands for power are up more than industry's needs. Domestic consumption is now running about 16 per cent higher than in 1949. Commercial and industrial consumption is up about 14 per cent from last year. The greater number of houses and the increasing use of appliances and air conditioning units in the home are responsible for the higher residential consumption. Rural consumption is up about 13.5 per cent. Commercial and industrial users, buying over 15 billion kwhr a month, are still the biggest consumers. Domestic buyers use more than 5 billion kwhr a month.

No serious power shortage yet exists in the major industrial areas of the U. S., although generation in the Pacific Northwest is just barely ahead of demand. When and if industry has to add second and third shifts to keep up with military and civilian needs, most utilities will be able to handle the situation because the added load will come at hours other than those when industrial demand is at its peak.

Capacity Grows—Public and private utilities will spend about $2.9 billion this year on construction, to boost the generating capacity to about 69.1 million kw. Nearly the same amount was spent last year when the capacity was boosted to 62.7 million kw. The 1950 capacity will be nearly double the 1939 potential of 39.9 million kw.

About 67.3 per cent of the power generated today is by fuel burning plants; 32.7 by water power plants. For most utilities east of the Mississippi, coal is still the cheapest fuel. Much of the nation's generating capacity can use coal or an alternate fuel.

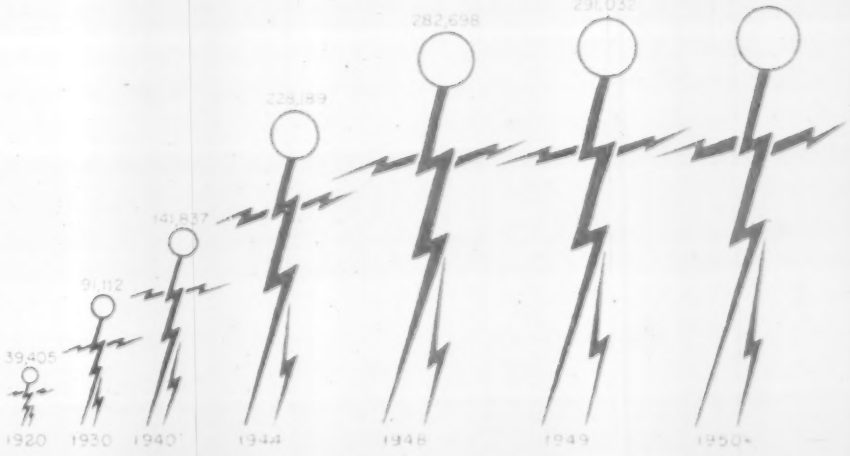
South's Power Needs Rise

Business and industrial activity in the area served by the four electric operation subsidiaries of Southern Co. have increased so rapidly in recent months that Southern's management has revised upward its estimated load growth and construction requirements over the 1950-1952 period, Chairman E. A. Yates says.

The four subsidiary companies—Alabama Power, Georgia Power, Gulf Power and Mississippi Power—had a 20 per cent increase in power output in June compared with a year ago. Textile plants in Georgia and Alabama account for much of the increased power use. Despite the increase in system load this year, there's enough power available in the territory, says Mr. Yates.

No Short in Electricity Supply

(Power Generation in Millions of Kilowatt Hours)



* Estimated. Source: Edison Electric Institute.

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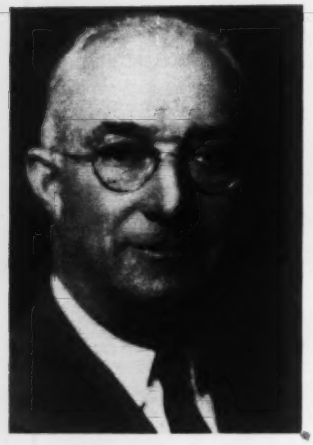
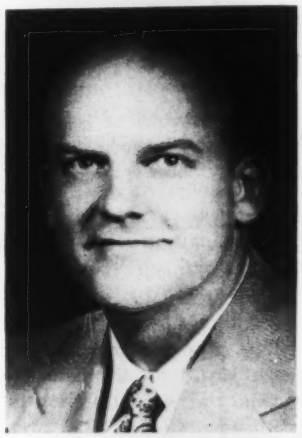
Men of Industry



HENRY P. CHAPLIN
. . . elected president, Cone Automatic

LEE O. WITZENBURG
. . . Cleveland Worm & Gear gen. sales mgr.



JOHN R. QUEEN
. . . elected president, Columbia Mchy.

Henry P. Chaplin was elected president and treasurer, **Cone Automatic Machine Co. Inc.,** Windsor, Vt., succeeding **Horace P. McClary,** now chairman of the board. **Jacques A. Gerard,** formerly export manager, was elected vice president in charge of sales. Other officers include **L. L. Cone,** vice president, and **A. B. McClary,** secretary.

Appointment of **James F. Stomber** as administrative assistant is announced by **Hanson-Van Winkle-Munning Co.,** Matawan, N. J. Mr. Stomber came to the company this year from Lee Higginson Corp. where he was assistant to the vice president and comptroller as financial analyst.

Optimus Detergents Co., Matawan, N. J., appointed **Charles N. Chalfant** as industrial service representative in the metropolitan New Jersey area.

Jack R. Hight was appointed manager of public relations and advertising for **Sharon Steel Corp.,** Sharon, Pa. He comes to the newly created post for the company after serving as promotion manager of the *Iron Age*. Prior to holding that position in 1944 Mr. Hight was employed in the public relations department for Bell Aircraft Corp.

James E. Reagan was appointed assistant manager in charge of sales promotion and advertising by **Ward Leonard Electric Co.,** Mt. Vernon, N. Y. Mr. Reagan who joined the company in 1937 as sales engineer formerly handled sales promotion activities for Ward Leonard and since 1945 has been editor of its house organ.

Lee O. Witzenburg is named general sales manager for **Cleveland Worm & Gear Co.,** Cleveland, and its subsidiary, Farval Corp. He brings to his new position a broad experience in the field of power transmission, having been sales manager of the V-belt division, Gates Rubber Co. and more recently sales manager of Tann Corp.

George M. Burrier was appointed as assistant general superintendent of the Midland, Pa., Works of **Crucible Steel Co. of America,** New York. Mr. Burrier formerly was associated with Republic Steel Corp. He succeeds **M. J. Meinen** who has resigned to take a position with another company.

SKF Industries, Philadelphia, has set up an 11-state region with headquarters in San Francisco to meet increased western demand for roller and ball bearings. **J. C. Bowman** will be manager of the new region.

Robert S. Herwig has been appointed vice president in charge of production, **Belco Industrial Equipment Division,** Bogue Electric Co., Paterson, N. J. **John R. Rhinehart** was named vice president in charge of engineering and development for the division. **George Apfel** was promoted from assistant manager to manager of technical sales. **Robert A. Roe** was promoted to general sales manager.

Francis Thomas has been elected a vice president of **Orinoco Mining Co.,** New York, U. S. Steel Corp. subsidiary. He resigned as a vice president of S. J. Groves & Sons, contractors and engineers, to accept the new appointment.

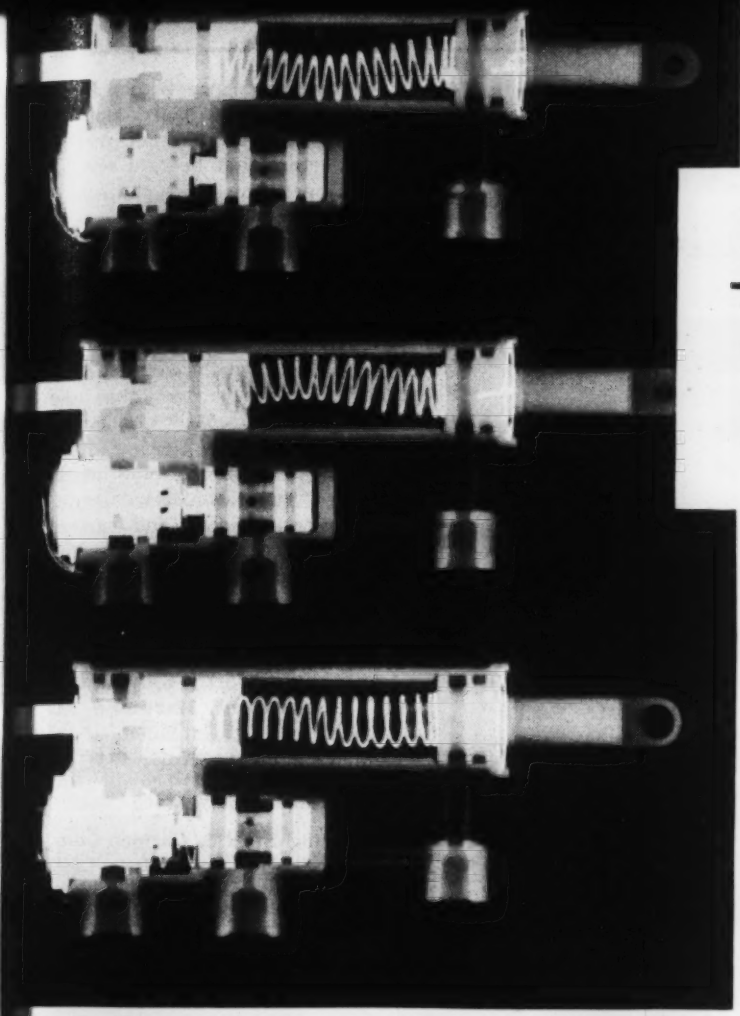
John R. Queen, formerly with Allis-Chalmers Mfg. Co., was elected president of **Columbia Machinery & Engineering Corp.,** Hamilton, O., succeeding **James C. Hart.** Other new officers elected are: **J. V. Delaney,** treasurer; **Lamar Jackson,** secretary; and **Paul G. Pater,** assistant secretary. Control of the corporation recently was acquired by New York interests who will continue the present line of mechanical presses, squaring shears, press brakes and allied heavy equipment. The new board of directors are: **James A. Walsh,** chairman; **Alfred Schwarzenbach,** president of Schwarzenbach Huber Co.; **William F. Thompson,** partner of Greene & Co.; and **Allan Merrill,** Ford Motor Co.

Riverside Metal Co., Riverside, N. J., has assigned **Richard E. Pilling** to assist the general sales manager in the Newark offices. His assignment is aimed at offering expanding sales and services to users of phosphor bronze, nickel silver, cupro nickel and beryllium copper.

Ivan E. Howard, hydraulics and lubrication engineer, was named regional supervisor for the **Clark Equipment Co.'s** industrial truck division in the south central territories. He will make his headquarters in Peoria, Ill.

G. W. Warnick was elected vice president in charge of operations by **North American Refractories Co.,** Cleveland. Mr. Warnick's appointment was effective Aug. 1.

Republic Flow Meters Co., Chicago, has appointed **Ralph E. Holmes** as

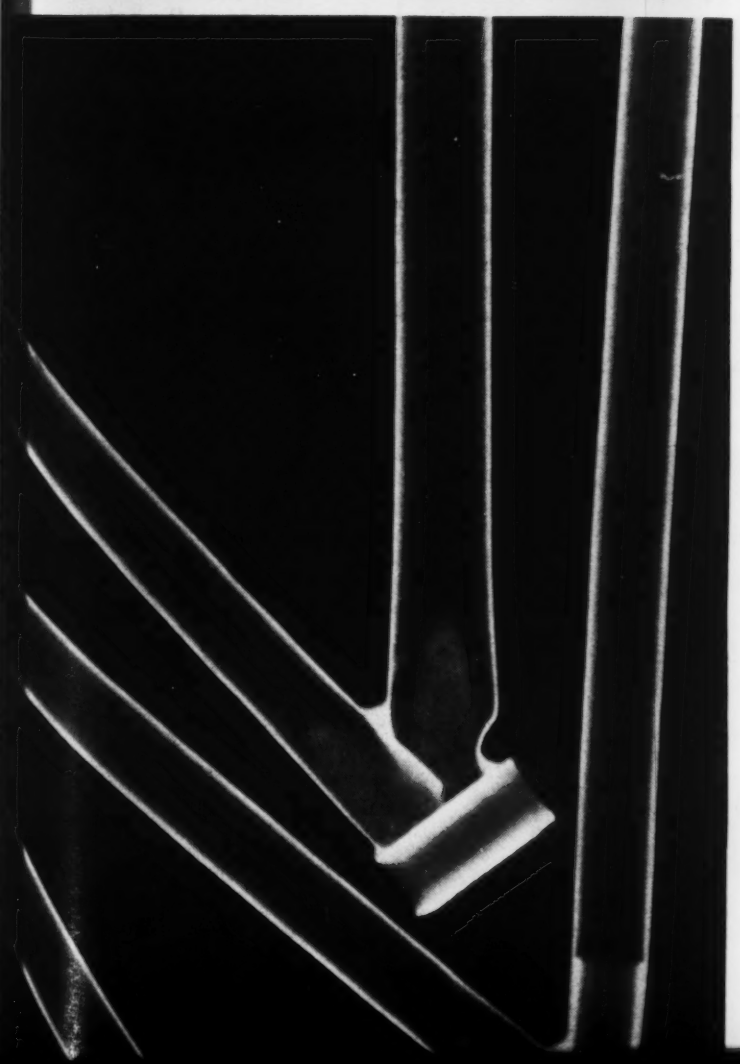


RADIOGRAPHY

goes beyond inspection of castings and welds

CHECKS ASSEMBLIES

Two of a group of hydraulic cylinders failed to function. Disassembly would have taken too long and involved breaking seals. Radiography compared the two with a good cylinder and revealed not only the compression springs rubbing on cylinder walls but also the absence of a second coil spring in the valve assemblies.



EXAMINES ENCLOSED SURFACES

Even though treated and sealed, these landing gear struts of an amphibian plane can develop internal corrosion and become weakened. Radiography alone can provide an examination of these internal surfaces. So the manufacturer has made it routine in the periodic inspection for service and safety of its amphibians.

Your x-ray dealer will gladly discuss the many ways radiography can aid your business by increasing foundry yield, checking welds and doing many other important and valuable non-destructive inspections.

EASTMAN KODAK COMPANY
X-Ray Division, Rochester 4, N. Y.

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manager of its Cincinnati district. The district includes central, western and southern Ohio and eastern Kentucky.

M. W. Sledge has been named to replace the late **E. W. Stephens** as manager of the belt sales department at the **Goodyear Tire & Rubber Co.,** Akron. Formerly the assistant manager, Mr. Sledge will work closely with **C. F. Smith,** newly appointed chief project engineer, on large conveyor belt prospects. In a complete revamping of the department, **H. R. Harrington,** former senior staffman, was designated as assistant manager and **J. L. Thornton** became manager of the belt sales coal division. **A. B. Walter** continues as chief engineer of the coal mine division.

Peabody Engineering Corp., New York, announces the following appointments: **William Godley** is manager of contract sales, **George E. Smith** serves as manager of the air heater division and **Edward R. Clark** is manager of the automatic oil burner division.

H. E. Swanson, formerly contracting manager of the structural steel division, Isaacson Iron Works, joined **Bethlehem Pacific Coast Steel Corp.,** Seattle, as contracting manager of its new structural steel plant now approaching completion.

Election of **W. H. Winans** as vice president-industrial relations is announced by **Union Carbide & Carbon Corp.,** New York. Mr. Winans has been engaged in industrial relations activities since he joined the corporation's National Carbon Division in Cleveland in 1916. He was appointed industrial relations manager of Union Carbide & Carbon 31 years ago.

FRANK B. RACKLEY
. . . president, Jessop Steel

Frank B. Rackley, formerly executive vice president, **Jessop Steel Co.,** Washington, Pa., was elected president of the company. Mr. Rackley joined Jessop Steel in June, 1948, as general manager of sales and since that time has held the posts of vice president in charge of sales and executive vice president. Prior to joining the company he was manager of stainless sales for the western area of Carnegie-Illinois Steel Corp. Jessop's reorganization plan was approved at a hearing in the Washington county courts as was the election of the board of directors. The new board consists of **James M. Lambie,** chairman, **Eugene Reardon, James S. Lyon, Harry Cohn, Mr. Rackley, Milton Hulme, Louis J. Cross** and **Andrew Dallstream.**

William F. McConnor has been elected executive vice president of **National Tube Co.,** Pittsburgh. At the same time **H. J. Wallace** was elected vice president in charge of sales for the U. S. Steel Corp. subsidiary to succeed Mr. McConnor. For ten years prior to becoming vice president in charge of sales in 1946 Mr. McConnor served as general manager of sales and before that he held several important operating positions including that of assistant to vice president-operations. Mr. Wallace has been general manager of sales since 1946 and has been with the company since 1928.

Thomas J. Wood was appointed chief metallurgist of the Brake Shoe and Castings Division, **American Brake Shoe Co.,** New York. He joined the company in 1939 as assistant metallurgist and was assistant superintendent, superintendent and eastern district works manager in the division's operating department. **Raymond A. Frick** succeeds Mr. Wood as eastern district works manager. **Ralph C. White** was named superintendent of the North Kansas City plant. **Raymond A. Martinson** has been appointed superintendent of the Chicago plant of the brake shoe and castings division.

Firth Sterling Steel & Carbide Corp., McKeesport, Pa., appointed **Louis DeMarco** as sales engineer, carbide division. He will specialize on carbide cutting tools and wear part applications.

Appointment of **Jesse W. Eakins** as sales representative in eastern Michigan and Toledo, O., is announced by **Centric Clutch Co.,** Cranford, N. J. He will work out of Detroit.

H. K. Porter Co. Inc., Pittsburgh, appointed **John A. Mulheren** to the newly created post of advertising manager. Mr. Mulheren will co-ordinate and supervise the advertising and publicity programs of the parent company and its divisions: Quaker Rubber Corp., Hinderliter Tool Co.,

W. H. WINANS
. . . V. P., Union Carbide

WILLIAM F. McCONNOR
. . . executive V.P., National Tube

H. J. WALLACE
. . . sales vice president, National Tube

FLOYD DURHAM
. . . V.P., production, Caldwell Indus.

W. C. SNYDER JR.
. . . named president, Freyn Engineering

L. C. DANIELS
. . . joins Buda Co. as vice president

American-Fort Pitt Spring Division and Jarecki Mfg. Co.

Floyd Durham was elected vice president in charge of production, **Caldwell Industries Inc.**, Kent, O. Mr. Durham was formerly associated with Packard Electric Division, General Motors Corp., and prior to that with Diamond Match Co. He will manage all production activities of the Caldwell plant which manufactures electrical wiring harness and assemblies for the automotive, aircraft, marine, railway and appliance industries.

Appointment of **James T. Potter** as representative for North and South Carolina is announced by **Graver Water Conditioning Co.**, New York. Mr. Potter will provide engineering and sales service on softeners, feeders, filters and other equipment for removing impurities in water.

W. C. Snyder Jr., vice president and manager of the metallurgical department, Engineering and Construction Division, Koppers Co. Inc., has been named president of **Freyn Engineering Co.**, wholly owned Koppers subsidiary. Mr. Snyder succeeds the late **Louis T. Shorley. Gordon Fox,** Freyn vice president, was appointed executive vice president and will fill the unexpired term of Mr. Shorley on the board of directors. Mr. Snyder will retain his responsibilities as manager of the Koppers division's metallurgical department with headquarters in Pittsburgh. Mr. Fox will manage the activities of Freyn's Chicago headquarters. **E. J. Westcott** will occupy the dual position of secretary and treasurer.

Charles L. Boleky, formerly sales manager, **Ludgate, Lear & Co.,** has been appointed a vice president of the Pittsburgh appraisal engineering firm.

L. C. Daniels, formerly chief engineer for Towmotor Co., joined the **Buda Co.,** Harvey, Ill., in the capacity of vice president in charge of the materials handling division. Mr. Daniels' past experience includes 20 years as experimental engineer for White Motor Co., service with Twin Coach Co. as chief engineer and a period spent as chief engineer on wheel and crawler tractors for the Cleveland Tractor Co.

Donald J. Henry was named assistant head of the metallurgy department, **General Motors Research Laboratories,** Detroit. He specialized in studies relating to casting of armor piercing shot, cycle annealing of forgings and hot salt quenching methods. For four years he was in charge of heat treat in the laboratories' processing department. **Lewis B. Case** retired from the laboratories' industrial hygiene department.

OBITUARIES...

Irving S. Grombacher, 47, president of **Royal Metal Mfg. Co.,** Chicago, died Aug. 2 in Jamestown, N. Y., after a brief illness. He suffered a cerebral hemorrhage while on a business trip. Mr. Grombacher joined the company in 1923 as its first purchasing agent and after a series of promotions was elected president in July, 1947.

William H. McDowell, consulting engineer at the Electro Metallurgical Division, **Union Carbide & Carbon Corp.** in Niagara Falls, N. Y., died Aug. 3.

Col. Garrit C. DeHeus, 67, executive vice president, **Chicago Foundrymen's Association,** died in Chicago Aug. 3 of a heart attack. He affiliated himself with the Chicago Foundrymen's Association in 1946.

Charles N. Safford, 63, president and director of the **Lovejoy Tool Co.,** Springfield, Vt., died in Burlington, Vt., on July 23. He was a co-founder of Lovejoy Tool in 1917 after earlier association with Jones & Lamson Machine Co. He held the position of treasurer with the company from its founding until 1948 when he was elected president.

Cyrus C. Fischer, 65, assistant purchasing agent for **Allis-Chalmers Mfg. Co.,** Milwaukee, died Aug. 1 after a long illness.

Fred G. Rumball, 52, director of West Coast purchasing for **Ford Motor Co.,** died in Los Angeles, July 30. He was sales manager in Detroit for Timken Roller Bearing Co. from 1920 to 1932 and sales engineer with Federal Bearings Co. Inc., West Poughkeepsie, N. Y., from 1932 to 1945.

Otto C. Grenzke, 55, founder of the **Wolverine Tool Co.,** Detroit, died July 31. He founded the company in 1926 and continued as president until he vacated that position to become chairman of the board.

Anthony F. McGraw, 56, Pacific Coast sales manager for **Dearborn Motors Corp.,** national distributor for Ford tractors, died in Detroit, Aug. 4. He previously was employed by Food Machinery Corp. and before that was general sales manager of the tractor and equipment division, Allis-Chalmers Mfg. Co.

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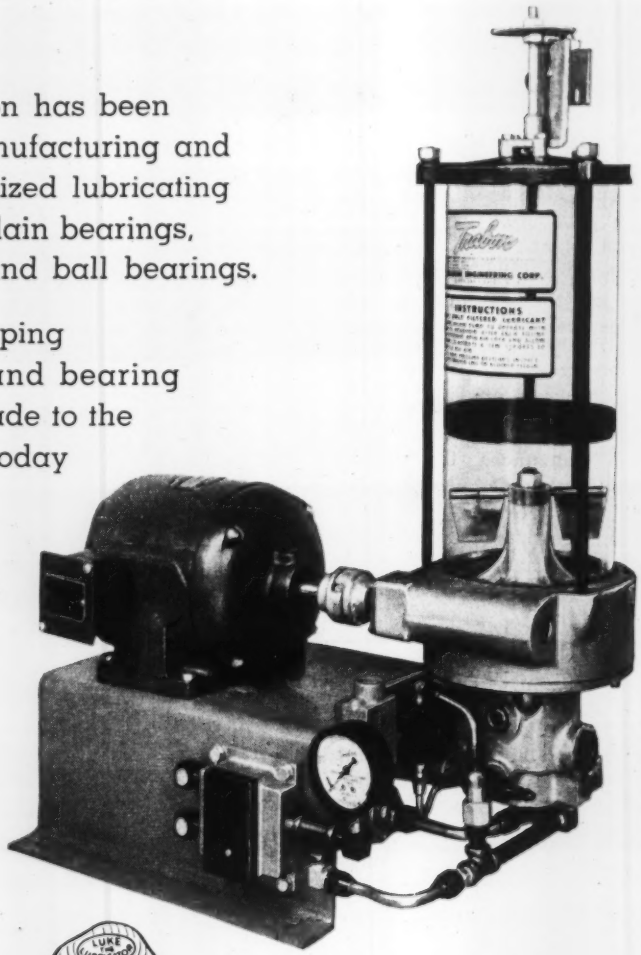

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OIL AND GREASE SYSTEMS

TRABON ENGINEERING CORPORATION
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Production AND Engineering
NEWS AT A GLANCE

PERMEAMETER PROVIDES MORE ACCURATE VALUES— An improved magnetic permeameter for precise testing of magnetic materials at magnetizing forces up to 300 oersteds is reported by National Bureau of Standards, Washington. The new instrument is absolute in principle—that is, its constants are derived from its own dimensions so that calibration by reference to any other permeameter is not required. Simple and convenient to operate, the unit can be used to obtain values of induction accurate to within about 0.5 per cent, and values of magnetizing force accurate to within 0.5 per cent.

"PLEATED" FURNACE ELEMENTS— Advantages of both flat ribbon and round bar types of heating elements are combined in the "pleated" element currently used in electric heat treating furnaces made by Trent Inc., Philadelphia. The element actually is a ribbon that has been folded into a series of return bends, then formed into a trough-shaped cross section to give it high rigidity. It is light and provides such high resistance that it can be usually operated directly on line voltage, without transformers.

ALUMINUM "ARMOR" FOR CABLE— Seamless aluminum sheathing, thinner, stronger and lighter in weight than the usual lead sheathing, can be applied to telephone and electric power cables by a method developed by Aluminum Co. of America. One foot of the new product weighs about one-eighth as much as an identical length of lead sheathing; it also is softer and more flexible than aluminum "armor" previously produced. Process used by the company involves the principle of cold reduction or swaging. About 3500 feet of the product were used in the telephone system of Alcoa's Point Comfort, Texas, works.

REJECTS CUT 99 PER CENT— The hot spray painting process, a relatively new finishing technique that substitutes electric heat for thinner is paying off big dividends for Associate Painting & Japanning Co., Cleveland. High quality finish is the most important advantage being derived from the method. When paint is heated to its ideal spraying temperature, it flows out more smoothly, dries to a better gloss. Runs, sags and orange peel are virtually eliminated. Since there is less solvent to be expelled from the film, a smoother, less porous film structure is obtained. Shrinkage is reduced and filling properties improved so surface imperfections are better covered. Net result is a 99 per cent drop in rejects. Process also enables one coat of paint to do the work of two, since more solids are sprayed to provide a heavier, more uniform film.

PIN HOLES NO PROBLEM— Method of flame spraying polyethylene coatings on steel tanks, tank cars and processing equipment perfected by Houghton Laboratories, Olean, N. Y., eliminates danger of pin holes and other defects that encourage corrosion. The process, the company states, makes use of no solvents and applies coatings in thicknesses of 0.03125 to 0.250-inch. Technique consists of blowing polyethylene in powder form through a specially designed flame spray equipment. When deposited on the work in melted form, the finish sets up to a tough, nonporous film which provides unusual resistance to practically all chemicals and corrosive materials.

DOUBLE-TIME OUTPUT — Presses play an important part in the production of radiant baseboards at United States Radiator Corp., Detroit. Waterways for the heating element are formed of 14-gage, cold rolled steel in a conventional press brake. A high-speed press is employed in shaping fins from flat stock—two at a time and two strips at a time. Latter press makes about two strokes per second. Headers are pressed in two operations from specially-shaped blanks, ending up slightly oval shaped. (p. 82)

HEATING STAGE VITAL — Important phase of the hot-pressure welding process as practiced by Claude C. Slate, Los Angeles, is proper preparation of surfaces to be welded. This includes machining to match butting surfaces perfectly, and heating the weld area to transform the metal to a plastic state far enough back on both sides of the weld to compensate for upset travel. Heat is applied by means of an oxyacetylene heating head or ring which conforms closely to the peripheral configuration of the weld area. (p. 88)

SMALL BUT EFFECTIVE — Small inexpensive diamonds are better than one large expensive one—at least so far as grinding wheel dressing is concerned. Carboloy Co. says that diamond - impregnated carbide wheel dressers—using a number of small low-cost diamonds—are currently effecting savings up to 40 per cent in wheel dressing costs. It reports that the cluster type dressers are also easy to use and stand great abuse. (p. 90)

"SPECIALS" TAX MILLS — One method of cutting machining, forging and cold working costs is to use special bar shapes. Furnishing these "specials", which today are in greater demand, is no easy task for the bar mill. For one thing, continuous alterations of roll and guide equipment to compensate for the "specials" call for much skill. Also tonnage per hour is naturally reduced. Work required in making templates to turn these shapes in rolls is very tedious. As many as eight to ten different templates for fitting and tool grinding may be required for a single pass. (p. 94)

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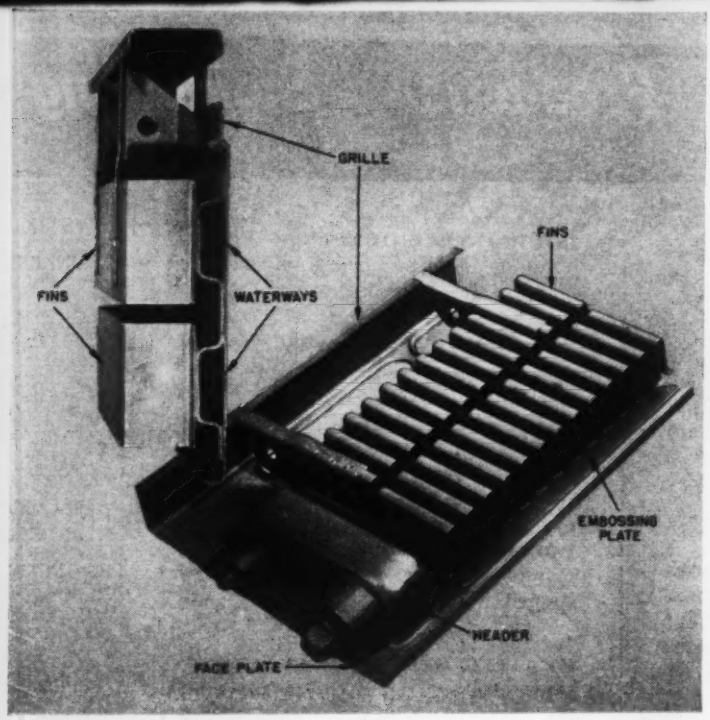


Fig. 1—Principal components of radiant heating baseboard are shown by these sections. Note location of waterways in relation to fins

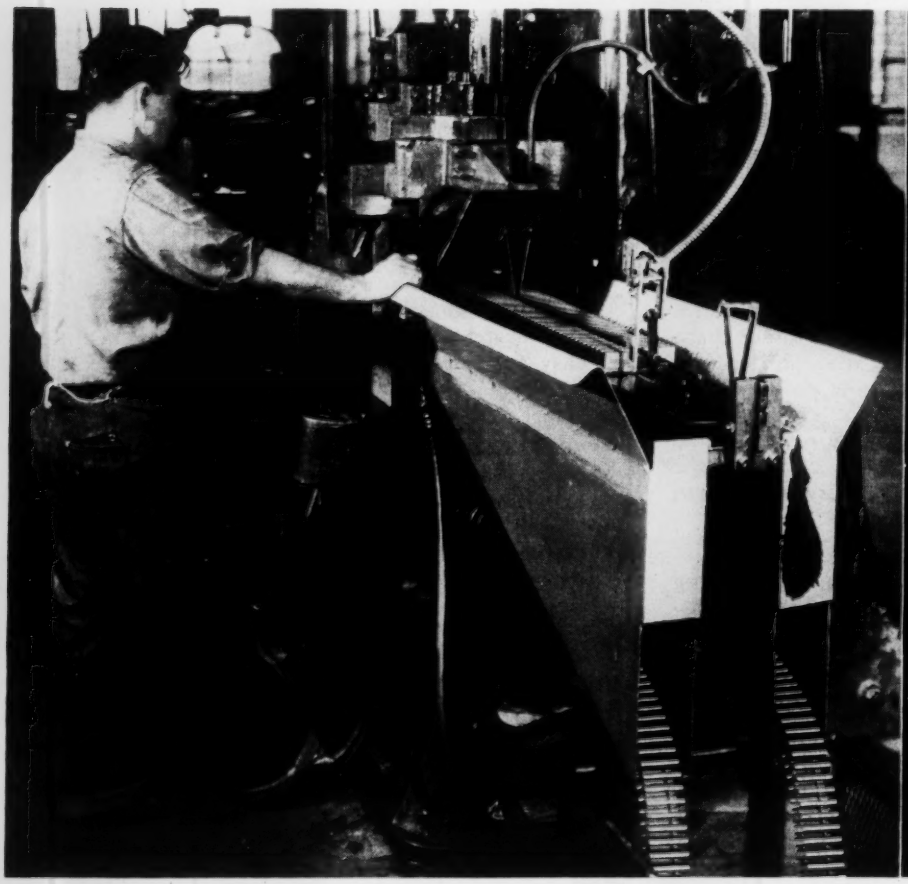
How U. S. Radiator

In their latest stage of evolution, old-style radiators have shrunk into unobtrusive heating baseboards with an accompanying construction change from cast iron to pressed steel. Using modern press operations, welding and brazing techniques, the company so far has turned out more than 100,000 lineal feet of product

OLD-STYLE radiators for hot water heating systems of a quarter-century ago, over the years, have grown longer, lower and leaner. In their latest stage of evolution they have shrunk into unobtrusive baseboards with an accompanying construction change from cast iron to pressed steel.

Principles of baseboard heating were established over 20 years ago in research conducted at the University of Illinois, but it is only within the past four years that engineering development and testing have

Fig. 2—This high-speed press shapes fins from flat stock, two at a time. Fins are formed on a slight taper



tor Makes Radiant Baseboards

By A. H. ALLEN
Detroit Editor STEEL

been carried to the point where suitable designs were completed for commercial and residential applications.

United States Radiator Corp., Detroit, introduced its radiant baseboard in February, 1949. Since then it has supplied over 100,000 lineal feet to builders. Current production is running about 1800 lineal feet per shift.

Elements 2 Inches Thick—The baseboard heating elements, adaptable only to hot water systems, are 2 inches thick and 9 inches deep. They are manufactured in lengths from 2 to 12 feet, in 1-foot increments.

Production runs from 15 per cent in the 12-foot lengths down to 3 per cent in the shortest sections. The proper overall length to be used in a given room is calculated from the heat losses of the room, each lineal foot of the heating element supplying 830 Btu with 215-degree water, or the equivalent of 3½ square feet of cast iron raidator.

Built To Last—Radiant baseboard, because of its welded and brazed steel construction, is light, weighing only 7 pounds per foot, permitting easy handling of the longest sections by one man. Steel construction provides a sturdy and durable assembly which can withstand plenty of abuse without damage in homes, commercial and industrial buildings.

Principal components of the baseboard section, as shown in Fig. 1, include a face-plate which is the outer surface; longitudinal waterways formed in a so-called embossing plate brazed to the reverse side of the face plate; two rows of longitudinal fins welded and brazed to the raised portions of the waterways; and finally a grille section which is locked to the turned-over upper edge of the faceplate in front and spot welded to stamped brackets which in turn are supported by being spot welded to the outer surface of the fins at intervals. At the ends of each section, the waterways are flash welded to a formed steel header element, the latter welded and brazed to the faceplate to make it watertight. Upper and lower fittings are brazed to the outer side of the header and upon installation they are connected to the piping of the hot water system.

Waterways Formed on Press Brake—Waterways

Fig. 3—Edges of faceplate sections are turned over to a depth of ½-inch by this 500-ton hydraulic press

Fig. 4—Special-shaped blanks shown here are pressed in two operations to form headers

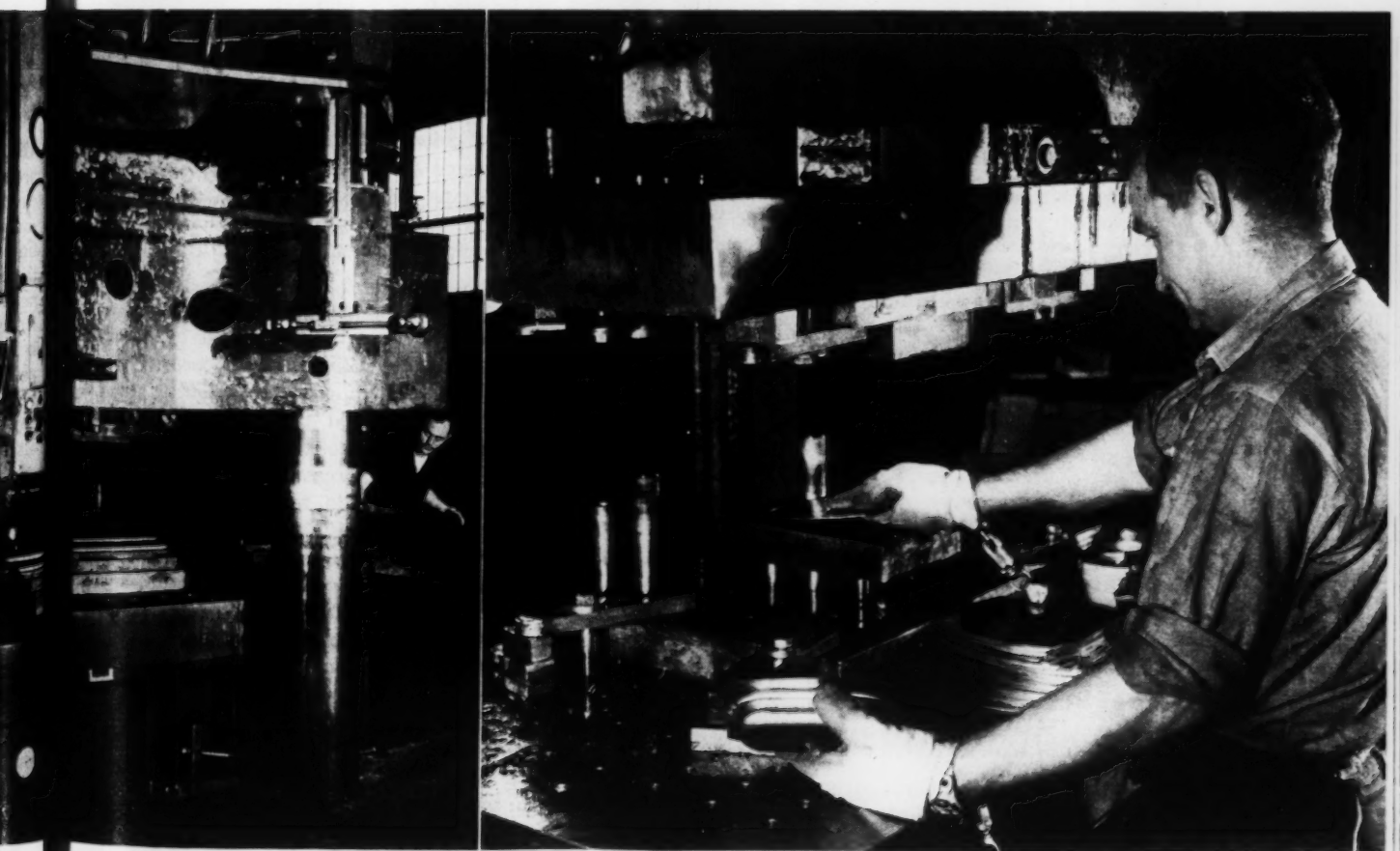


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Fig. 5—Here headers and waterways are flash welded

Fig. 6—Fins being assembled to waterways. Thin strips of copper are placed under contacting surfaces before fin strips are located with temporary spacers

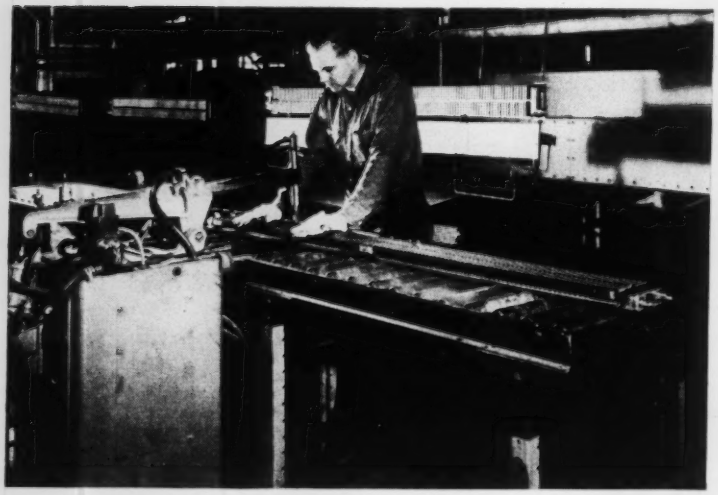


Fig. 7—In spotwelding operation, each depression in the fin strip is joined in several places to the waterways to provide firm hold until brazing is completed

are formed of 14-gage cold-rolled steel in a conventional press brake. Balance of the assembly is 20-gage steel. Fins are shaped from flat stock, two at a time and two strips at a time in a high-speed press shown in Fig. 2. The press makes about two strokes per second and, as the formed strips advance across a runout table, they strike a stop at the proper length, actuating a cutoff mechanism.

Fins are 1 5/16 inches deep and 2¼ inches wide, each segment being about ⅜-inch thick, formed on a slight taper. A 500-ton hydraulic four-post press, Fig. 3, is used to turn over the edges of the faceplate sections to a depth of ½-inch. Headers are pressed in two operations from specially-shaped blanks. They are slightly oval-shaped with holes punched at one end for the fittings and sufficient edge left to permit a tight braze to the faceplate. Fig. 4 shows this operation.

Spacers Locate Fins for Welding — Headers and waterways are flash welded as shown in Fig. 5. In assembling them to the waterways, thin strips of copper, about ½-inch wide, first are laid under the contacting surfaces, then the fin strips positioned, with temporary spacers used to locate them properly until they can be spot welded. The assembly operation is shown in Fig. 6, spotwelding in Fig. 7. Each depression in the fin strip is spot welded in several places to the waterways so that it will be held firmly until the brazing has been completed.

The assembled waterways, fins and headers are then loaded on fixtures carried by an overhead chain conveyor, each with its matching faceplate below it. They are carried through an alkaline wash chamber, and then go to assembly tables, where the two pieces are placed together, with copper strips under the water ways.

Straps are fastened over the tops of the fins and the assembly is conveyed to the hydrogen brazing furnace. Three rows of these assemblies travel through the furnace simultaneously. The previously located copper strips melt down and in the hydrogen atmosphere penetrate thoroughly through the joints between the various elements, providing a watertight bond.

Tested Like Tire Tubes—A simple hand straightening operation follows, whereupon the pieces are given a water test under 125-pound air pressure, the sections being immersed in a water trough, permitting any leaks to be detected at once by the appearance of bubbles. In service the radiant baseboard carries only 10-15 pounds pressure for residential installations, up to 50 pounds for commercial uses.

After approval in test, grille pieces and supporting brackets are spot welded in place and the sections are dipped in zinc chromate primer. After drying they are ready for shipment in individual cartons, each package including mounting brackets and aluminum foil backing recommended for use as installed.

Inasmuch as room dimensions may call for certain sizes of radiant baseboard, which will not necessarily extend the full length or width of the room, matching extension panels of pressed steel are made, also inside and outside corner sections, 6 and 12-inch end closures, as well as adjusable intermediate enclosures.

Boring Fixture Simplifies Hole Machining Job

The unusual positioning equipment described here locates the workpiece from its outside contour, holds it securely. Indexing feature guarantees accuracy in machining holes to meet close tolerances

By ROBERT MAWSON

FAST, accurate positioning of a workpiece for drilling, boring and reaming operations can spell the difference between good and poor machining practice. Even on relatively simple parts, a well-designed fixture is often the best guarantee that holes will be machined to specified dimensions.

Fig. 1 shows a center link made from a steel forging. This link is part of a machine built by Reed-Prentice Corp., Worcester, Mass.

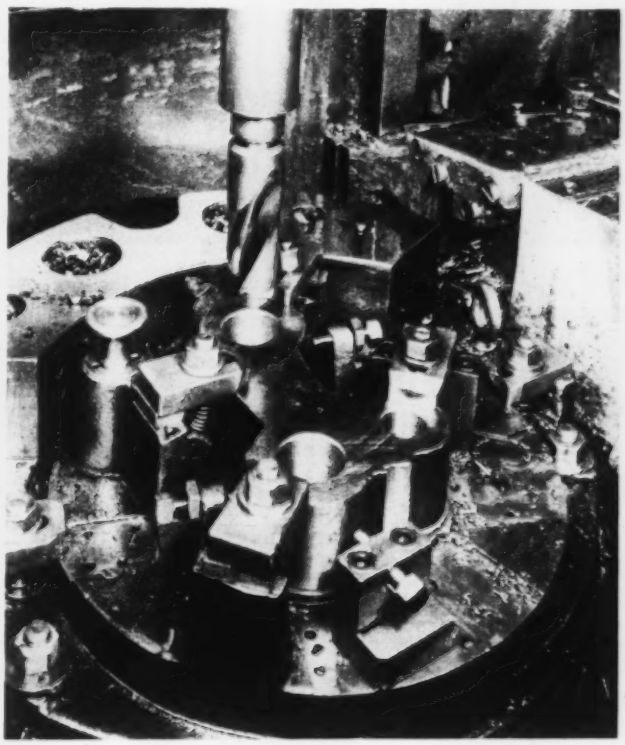
Operations before the piece is bored are: 1. Inspect, 2. grind one side, 3. grind both sides, 4. snag sharp edges.

Next operation is drill one 2.250-inch hole with $2\frac{1}{8}$-inch drill. Bore and ream holes 0.040-0.050-inch under size. Repeat for the other 2.250-inch hole. Drill the 1.375-inch hole with $1\frac{1}{2}$-inch drill. Bore and ream hole 0.040-0.043-inch under size. These holes are ground to size in a later operation.

The tool enigneering problem was to build a fixture which would enable the boring of these holes to meet the required limits, two thousandths of an inch. Also as this part operated in close or restricted quarters the holes had to be machined in positions relative to the outside contour of the piece.

Stiff Design Requirements—It can readily be seen that a fixture to meet these requirements must be ruggedly constructed, must locate the workpiece accurately both as regards the positions of the holes and also contour of the forging. Indexing must be positive and also the workpiece must be held securely during the machining operation. A boring fixture which complies with all these requirements is illustrated in Fig. 2.

The fixture base is made of cast iron and finish



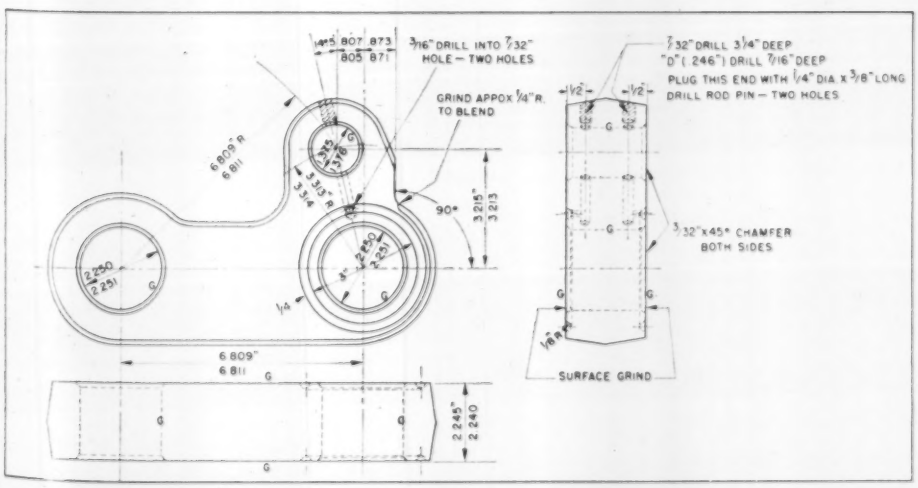


Fig. 1 (left)—Part for which fixture was designed. This center link for a Reed-Prentice machine is made from a steel forging. Note dimensional accuracy to be maintained

Fig. 2 (above)—Closeup of fixture in place on a Bullard vertical turret lathe

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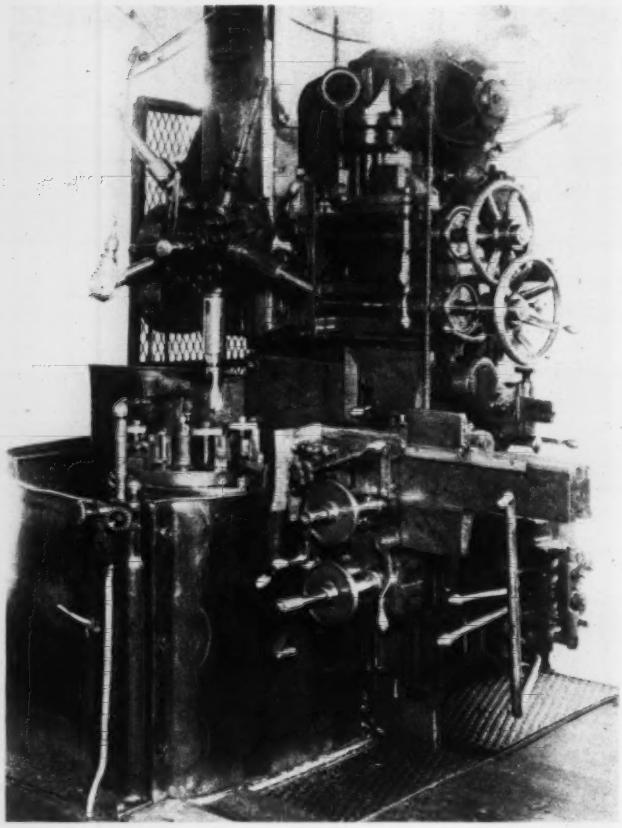


Fig. 3—Bullard machine and tools set up for performing the machining operations described

machined on the important surfaces. Base is provided with two slots to hold the fixture on the machine table. Slots are machined in two lugs of the base to be a good sliding fit for hardened steel clamps. These are fastened in the machining position by screwing down steel hexagon nuts on studs threaded in the base and passing through slots in the clamps. Under each clamp is a tension spring which raises the clamp when pressure has been removed by screwing back the nut.

Machined on Vertical Turret Lathe—A pack-hardened steel plug is fastened with three socket head screws on the lower surface of the base. The projecting portion of this plug is machined to be a tight slip fit in the center hole in the table of a 24-inch Bullard vertical turret lathe. In the base on the lower face is driven a hardened tool steel bushing. An axle shaft is press fitted in the bushing by means of two filister head screws. Into three accurately positioned, machined and counterbored holes are driven tool steel hardened and ground bushings each with a 1-inch hole in the center.

The index base is also made of cast iron and finish machined on the several contact surfaces. Slots are machined in three lugs to suit holding down clamps which are operated by hexagon nuts on studs tapped into the index base. On a machined pad in the index base a steel block is fastened with two socket head screws. This block is provided with another holding down clamp and threaded stud. Under all the clamps are placed tension springs to raise the clamps when pressure is removed. In smaller lugs, attached to the index base, are hexagon head set screws each with a jam nut.

In the center of the index base a hole is accurately machined. Into this hole a tool steel, hardened and ground bushing is inserted.

Holes Machined in Base—Three holes are accurately machined in the index base in positions similar to the holes to be machined in the workpiece. It will be noticed that the three holes in the index base are equidistant from the center hole. In the index base is bored a 1¼-inch hole in which is placed a tool steel, hardened and ground bushing. The hole is ground to be a good sliding fit for the indexing pin. This pin is made of machine steel, pack hardened, and is provided with a head to facilitate adjustments.

On a machined raised surface, where the center and three holes are located, is attached with six flat head screws and three dowel pins, a positioning plate. This detail is machined on the edges to have a similar contour as the workpiece and then ground on its two faces. Three holes are machined in the positioning plate in positions similar to the center link. Each is 1/16-inch larger than the mating hole in the workpiece.

After the index base is assembled on the base a cold rolled steel cover is fastened to the end of the axle shaft to prevent dirt or chips coming in contact with the bearing. When the indexing pin is placed in the assembled fixture a spring is placed over the pin and a threaded collar screwed into a tapped hole in the index base.

Fixture Located by Plug—To use the boring fixture, the assembled unit is located by the plug being inserted in the center hole of the table of the vertical turret lathe. Nuts on two T-head bolts which have been placed in the table slots and passing through the two slots in the base are tightened to hold the fixture securely in place. The two clamps which hold the index base and the base are then loosened. The index base is now rotated on the axle shaft until the indexing pin will enter one of the three positions. The two clamps are then tightened by their respective nuts; this holds the index base securely in this located position.

The several clamps on the index base are next moved back and the set screws in the small lugs are screwed back a short distance. One of the center links to be bored can now be placed on top of the positioning plate. This is then moved or adjusted by means of the set screws until the contour of the workpiece is in alignment with the shape of the positioning plate. The set screws are held firm by tightening the jam nuts on the set screws.

Clamps Moved Over Workpiece—Clamps on the index base are then moved over the workpiece and by tightening the clamp nuts the piece is held securely in the located position. The boring machine can now be started. Using the correct tool in the machine head a 2⅛-inch hole is drilled in the workpiece. The drill is then changed and the hole is bored and then reamed with tools to 0.040-0.043-inch under the 2.250 finish size. (*Please turn to Page* 106)

SEEN AND HEARD IN THE Machinery Field

By GUY HUBBARD
Machine Tool Editor

INDUSTRY HEEDS THE PORTENTS: The outstanding impression that I gained through one very full day at the Machine Tool Sales Conference at Cornell University, August 2, 1950, is that the metalworking industry in general—and the machine tool industry in particular—is "way ahead of the government" in preparing to cope with events in Korea.

According to several important men of that industry who appeared on the program at Cornell, the present upsurge in machine tool sales is not due to materialization of "phantom orders" nor is it due to panic buying such as has hit consumer goods industries. It is due to private enterprise's realization that mass production of implements of war must be prepared for in the tool and production shops in America even before the authorities in the Pentagon building make up their minds just what is needed.

Private industries, both large and small, have a rough idea of the general pattern of the work which eventually they will be called upon to perform in behalf of the armed services. They have a remarkably clear idea of the sizes and varieties and quantities of basic machines which they must have, to get this work under way when and if war orders materialize. They are underwriting their faith in the future of this country by getting set quickly to produce those things which sooner or later will be needed in quantities and in a hurry.

Therefore, modern machine tools will be ready and waiting for action when the first blueprints are released. A lot more will be available if the situation becomes more serious. Some machine tool builders already are putting on night shifts to hurry up deliveries of orders which suddenly are crystallizing after months of patient and helpful efforts on the part of company and distributor sales engineers.

The value of the missionary work which those men already have done now becomes apparent. The help which they will give in months to come toward getting these new machines tooled for production will be a further tribute to the importance of trained machine tool sales engineers in a period of national emergency. Theirs is an essential occupation. It deserves to be recognized as such.

MACHINES WITHOUT MACHINING: In critical periods of World Wars I and II remarkable things were done with "expanding metal" in emergency production of certain types of machine tools—shell lathes in particular.

Expanding metal is a sort of "babbitt in reverse", in that it swells slightly upon cooling instead of shrinking as most metals do. In that respect, and in its composition, it resembles type metal.

To my way of thinking, "the old master" of this technique of hurry-up machine tool building is Lucien I. Yeomans, consulting industrial engineer, Chicago. His successful achievements in quick manufacture of shell lathes and certain other machine tools are highlights in the industrial history of World War I. His methods were revived and actively promoted during World War II by Myron S. Curtis, under sponsorship of the National Machine Tool Builders' Association.

Basic idea of this method of construction is that machining can be avoided by "freezing" prefinished bars and tubes in cored gray iron castings by jig location of the bars and tubes in cavities into which the expanding metal is poured. Thus a section of tubing becomes the sleeve for a spindle, twin, ground steel bars become the ways, etc.

Pouring gates are cored into the castings and clay collars are molded around the tubes and bars to retain the metal until it cools. Slides, also jig located, are babbitted to the bar ways after they are "frozen" in place.

This system of construction is not altogether a product of war. It has been widely used in construction of light duty machinery—and in mounting of cam shafts in automatics—in normal times. It certainly is something to be kept in mind in case of another machine tool emergency.

PILOT MODELS: In Eli Whitney's time it was customary to make up a "master gun" as a preliminary to tooling up for mass production. Around the parts of this master gun gages, jigs, fixtures, dies and special tools were designed and fitted, to the end that every part in the mass produced "stand of arms" would resemble the corresponding part in the master gun "like successive prints from a copper plate engraving".

Despite great developments in "abstract" designing, drafting and tool engineering, since Eli Whitney launched the interchangeable system of manufacturing, highly competent designers and tool engineers still prefer to work with actual parts or models of parts rather than with outlines on paper. That is why models are made at successive stages of automobile design. That is why we hear more and more about "pilot models" of the ever more complicated mechanisms which industry is called upon to produce both in peacetime and wartime.

It is no insult to human mentality to state that an assembly drawing of a mechanism such as a hydraulic transmission, an aviation motor or a bomb sight is beyond comprehension. Even when "blown up" many times full size the drawing still is a confused tangle of lines. A perspective rendering is somewhat more understandable, but when it comes to complete comprehension, even the experts admit that they prefer the pilot model.

Construction of accurate pilot models now can be simplified and speeded up through use of recently perfected machine tools. Among these are drilling and boring machines with "spacing tables", turning, milling and grinding machines with templet control, jig boring and jig grinding machines and "jigmils".

Precision Rings

HOT PRESSURE WELDED

Support rings for aircraft jet engine blast tubes, high pressure metal gaskets and other equally close-tolerance parts are being formed with success by a direct descendant of the blacksmith's ancient art

By GILBERT C. CLOSE

REFINEMENTS of a very old metalworking technique are responsible for the successful manufacture of parts for some very modern applications. Growing recognition of the dimensional accuracy and excellent physical properties of parts formed by solid phase hot pressure welding is attested by the reliance designers place in the process.

One job shop currently in heavy production of precision hot-pressure welded components is the Claude C. Slate Co., Los Angeles. A relatively new enterprise, this organization is turning out in volume handling rings for oil field and shipyard rigging, support rings for aircraft jet engine blast tubes, and high-pressure metal gaskets for oil line and refinery valve installations. These parts must be as close to foolproof as industrial science can make them, and the support rings and metal gaskets must meet very close tolerance specifications.

Age-Old Process—The principle used in pressure welding is not new. Blacksmiths have employed the same technique for centuries by heating metal in a forge until it is slightly plastic then welding it together by means of hammer blows.

In modern hot-pressure welding, however, this ancient technique has been improved by controlling the amount of heat required to bring the metal to the right plastic condition, by fitting the surfaces to be welded to exclude air during the heating cycle and thus avoid oxides, and by applying controlled pressure automatically to forge the plastic metal together.

All work at the Slate plant utilizes the main advantages of hot-pressure welding, including: (1) Adaptability of the process to weld high and low-carbon steels; (2) smoothness and uniformity of the completed weld; (3) relatively low cost in repetitive work; and (4) maintenance of basic metal metallurgical characteristics. (No filler metal is used.) In welding 18-8 stainless steel, for instance, this last advantage is of paramount importance as the weld area retains the inherent corrosion resistance of the parent metal.

Surfaces Carefully Prepared—An important phase of the hot-pressure welding process is proper preparation of the surfaces to be welded. These are first machined or ground until they match nearly perfectly. The parts are then placed in the pressure welder and the butting areas brought together under an initial pressure of about 500 pounds per square inch of cross section. This pressure is sufficient to exude all air between the butting surfaces and prevent oxides from forming during subsequent heating.

Circular Heating Head Used—Heat is applied to the weld area by means of an oxyacetylene heating head or ring. This heating head must conform approximately to the peripheral configuration of the weld area. A circular head is used for heating butt-welded round or square stock. In other cases, such as in hot-pressure butt welding of railroad rails, the shape of the heating head conforms to the shape of the rails, and the blowpipes in the head vary in size according to the bulk of metal they must heat. Thus larger pipes are used for heating the rail proper than for either the flange or web.

The heating head is moved back and forth across the weld area to assure even heating and reduction of the metal to a plastic state far enough back on both sides of the weld to accommodate upset travel. When the metal has reached the proper upsetting temperature (2200 to 2300° F for alloy steels), upsetting pressure is applied and the weld is accomplished. Upsetting pressures vary somewhat with different alloys, but run between 3000 and 4000 psi when upsetting alloy steels.

Upset metal produced in hot-pressure welding creates an even and uniform bulge and may be left in the "as welded" condition unless subsequent machining is necessary or appearance dictates otherwise.

Weld Strength Greater—In pressure welding mild and alloy steels, the company consistently obtains weld strength greater than that of the parent metal. With Monel or the stainless steels in the 300 and 400 series, strength values average about 85 per cent of the parent metal. Rejections are few and far between. Of 3000 pressure welded parts produced, less than 2 per cent were rejected by Magnaflux inspection, and of these most were stainless steel.

This exceptional weld consistency, Slate engineers say, is due largely to the fact that no filler metal is used. Consequently the alloy characteristics of the metal through the weld are not altered. Other factors contributing to strength and consistency are absence of an oxide line through the weld, and the

Fig. 1 (right) — Pressure welding an alloy steel ring. Ring will be machined into a high pressure gasket for oil field use. The company-designed pressure welder produces upsetting pressures to 150,000 pounds

Fig. 2 (above)—Closeup of "C" type jig used in pressure welding closed rings

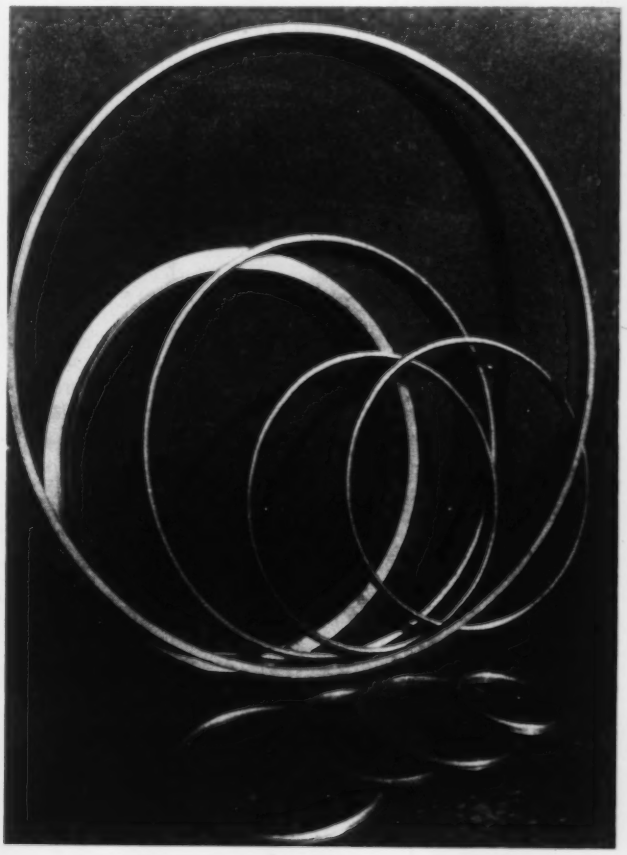
lower temperature required to bring the metal to a plastic rather than a liquid state.

Equipment Company-Designed — Pressure welding equipment was all designed and built by Claude Slate. The upsetting machine is hydraulically operated and capable of producing a total upsetting pressure in excess of 150,000 pounds. Upsetting pressures may be controlled within a desired maximum, and automatic stops provide precision control of upset travel distance. A dial indicator gage calibrated in thousandths of an inch aids in adjusting upset travel distance within precision requirements. Gas flow to the heating head is controlled by flow meters so that dependable time-temperature charts may be worked out for each type of job.

Jigs used in welding the closed rings were also designed by Slate and prove (*Please turn to Page* 111)

Fig. 4—Typical pressure weld in the "as welded" condition. Weld line visibility is only surface deep

Fig. 3 (below)—Typical pressure-welded parts after finish machining. Flanged ring is a support for an aircraft jet engine blast tube; smooth rings are high-pressure oil line valve gaskets. It is impossible to visually detect the weld in these parts



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Wheel Dressing Costs Ground Off 40 Per Cent

Used properly, diamond-impregnated carbide wheel dressers can effect sizable savings in retruing grinding wheels

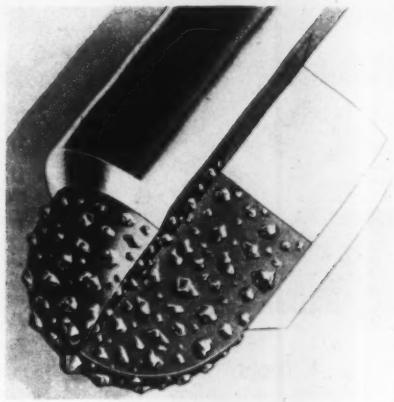


Fig. 1—Sectional view of an impregnated carbide wheel dresser showing construction, metal shank attached to carbide matrix, diamond-embedded matrix

DIAMOND-impregnated carbide wheel dressers of the type shown in Fig. 1—using a number of small, inexpensive diamonds embedded in a special carbide matrix instead of a single expensive diamond fitted into a steel holder—are currently effecting savings of up to 40 per cent in wheel dressing costs, according to Carboloy Co. Inc., Detroit.

Used For Final Truing—Their accuracy and economy in use have even led a number of grinding wheel manufacturers to adopt these dressers for final truing operations on the grinding wheels they produce. The same accurate dressing can be obtained in retruing wheels, if dressers are properly maintained.

Usual practice when using the dresser is to set it at a 10 to 15-degree lead angle with the wheel. The dresser is kept on the centerline of the wheel, or at most 1/32-inch below the centerline. It is never set above the centerline. A drag angle of 5 degrees, Fig. 2, may be found advantageous. A slightly faster traverse speed than for a single diamond dresser is recommended: 6 to 15 inches per minute for finishing and 18 to 30 inches per minute for roughing. For a very rough finish, increasing the traverse speed beyond 30 inches per minute helps to obtain a very free cutting, open wheel. Plenty of water should be used to prevent overheating.

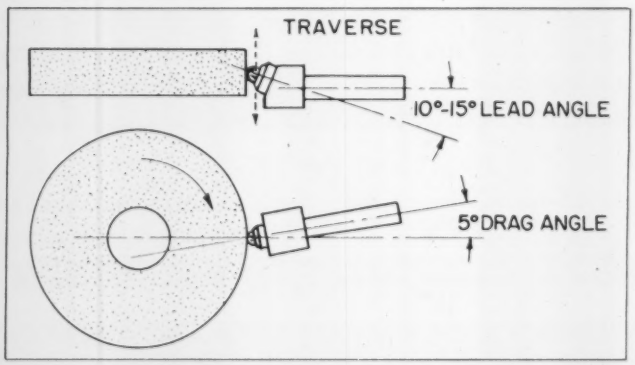


Fig. 2—Sketch showing method of using a cluster type dresser for truing a wheel

Heavy Infeeds Possible—Holding strength provided by the carbide matrix permits heavy infeeds. One such dresser was plunged 0.100-inch into a 46N aluminous oxide wheel for ten successive passes. After reaching a total depth of 1 inch, the dresser showed no discernible signs of harm. However, optimum results will be obtained by taking light cuts when truing wheels, not over 0.002-inch per pass.

Occasionally, a cluster-type dresser may dress a slight taper on the grinding wheel. To correct this condition, Carboloy recommends either turning the dresser slightly in the holder; reconditioning the dresser, if it is dull; or using a slightly larger size dresser. If the dresser glazes the wheel, the condition can usually be cleared up by either turning the dresser slightly in its holder; reconditioning the dresser; or increasing the traverse speed. If the shop records show that too few pieces are being secured from the grinding wheel per dressing, the traverse speed while dressing the wheel should be increased. If this does not correct the condition, a 0.0005-inch infeed should be used on the last pass while dressing, instead of the customary last pass without infeed.

Reconditioning Simple—Periodic resetting and reconditioning are of course necessary for optimum results as with any wheel dresser. The dresser can be "kept sharp" over a long period of time merely by giving it a quarter-turn in its holder when necessary. This brings new, sharp diamonds into contact with the wheel.

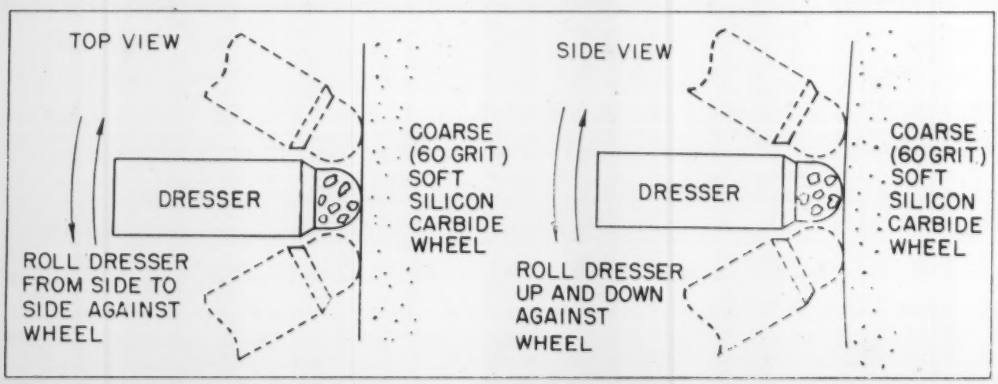

TOP VIEW
DRESSER
ROLL DRESSER FROM SIDE TO SIDE AGAINST WHEEL
COARSE (60 GRIT) SOFT SILICON CARBIDE WHEEL
SIDE VIEW
DRESSER
ROLL DRESSER UP AND DOWN AGAINST WHEEL
COARSE (60 GRIT) SOFT SILICON CARBIDE WHEEL

Fig. 3 — Sketches showing method of reconditioning wheel dresser by presenting it to a coarse grit wheel

Refractory and Wear-Resistant Parts Made from

New Silicon Carbide Material

Versatile new refractory material composed of a dense network of silicon carbide imbedded in a matrix of silicon may find wide use in refractory, electrical conductivity or corrosion resistant applications

Fig. 1—Collection of articles made of the new silicon carbide material. Items shown include furnace muffles, heating elements in various shapes, kiln furniture, tubes, wear resistant plates and heat exchanger pellets

HARDNESS and abrasion resistance are combined with a high degree of shock sensitivity, refactoriness and good electrical conductivity in a new refractory material described by C. G. Rose of the Carborundum Co. before the Electrothermics Symposium of the recent Electrochemical Society meeting. Known as Durhy, the material is composed of a dense network of silicon carbide imbedded in a matrix of silicon.

Fig. 1 shows a collection of Durhy articles made in the Carborundum laboratories. These include furnace muffles, heating elements in various shapes, kiln furniture, tubes, wear resistant plates and heat exchanger pellets.

Carbon Subjected to Superheated Silicon—According to Mr. Rose, new refractory material is formed by subjecting a skeletal carbon structure to the action of molten, superheated silicon. The molten, very fluid metal rapidly penetrates and impregnates the carbon structure and reacts with carbon to form silicon carbide.

Composition of two typical forms of the material:

	Per Cent Silicon Carbide	Per Cent Silicon	Per Cent Carbon
Low Carbon Type	36.07	55.73	6.42
High Carbon Type	44.62	44.64	8.90

Fig. 2 is a photomicrograph of the low carbon material; Fig. 3 shows the structure of the high carbon material. The crystalline network of silicon carbide is embedded in silicon, shown as the light colored background. Dark areas represent carbon particles which were not impregnated with silicon, but were converted on their surfaces to silicon carbide, as shown by the silicon carbide crystals surrounding each dark area.

Resists Oxidation—Mr. Rose reports that this new material shows good resistance to oxidation. After being subjected to severe oxidizing conditions at 1100° C for 9 weeks, samples gained an average of 2.5 per cent in weight. Upon breaking these samples, the fracture was found to be bright and clean, except where cracks occurred, indicating that oxidation only takes place on the surface.

Along with its refractory properties, the new refractory material is also electrically conducting. At room temperature, the resistivity is in the order of 0.02 ohms-cm. The resistivity drops gradually to 0.003 ohms-cm, as the temperature approaches the melting point of silicon. As the excess free silicon melts at approximately 1420° C, the resistivity drops suddenly to 0.0005 ohms-cm.

Impact Resistance Low—Impact resistance of the new material is low, being of the same order as that of the more fragile ceramic materials. It is attacked by hydrofluoric acid and hot alkalis, but is inert to most other common reagents. Maximum safe

Fig. 2—Low-carbon Durhy, 150X, unetched

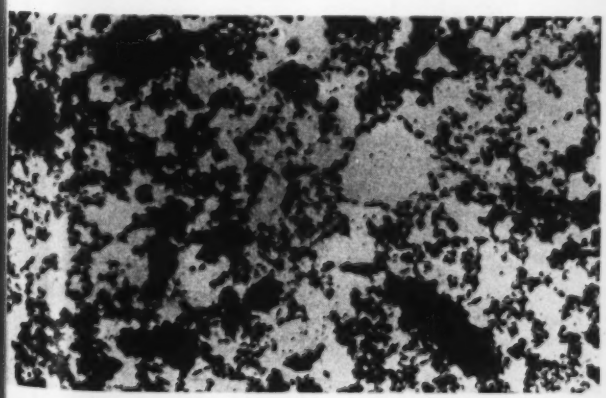
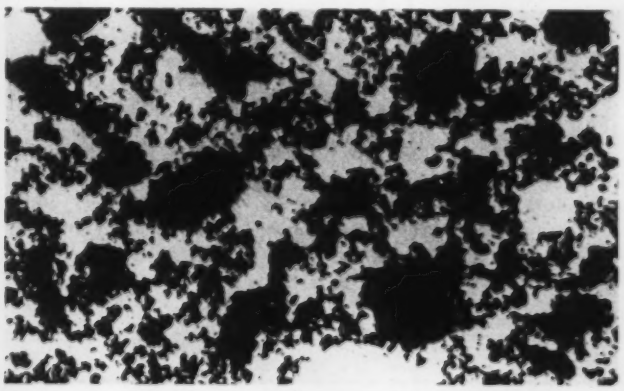


Fig. 3—High-carbon Durhy, 150X, unetched. Dark areas represent carbon particles which were not impregnated with silicon, but were converted on their surfaces to silicon carbide, as shown by the silicon carbide crystals surrounding each dark area



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operating temperature which will not cause major changes is between 1350 and 1400° C. Above this temperature, silicon melts and exudes out of the body. This changes its density, resistivity and other properties; however, it does not alter its shape or cause disintegration. Therefore, exposure to temperatures above the melting point of silicon may be warranted in some cases.

Rose stated that the physical properties of this new material indicate that it should be considered for use in the following applications:

As a refractory: Small furnace muffles, supports and racks, skid rails, crucibles, push rods, protection tubes, kiln furniture, heat exchange pellets.

As a wear resistant material: Wear plates, chutes for abrasive material, blast nozzles, sand slinger parts.

As an electrical conductor: Heating elements, ignitors, contacts.

As a corrosion-resistant material: Containers for calcining or roasting active reagents.

Fingertip Facts

Collection of 70 official basic economic tables in one pocket-size, loose-leaf volume is known as the *National Fact Book*, published by National Association of Manufacturers, New York. Facts and figures are culled from various government sources and are kept up to date by semimonthly revisions by the association's research department. Sections include public finance, national income, prices, hours and earnings in manufacturing, labor force and employment, industrial production, work stoppages, profits, operating businesses, etc.

Wrought Steel Up-to-Date

Up-to-date data on various properties of wrought steels, both carbon and alloy, at elevated temperatures, are included in a publication issued by American Society for Testing Materials and American Society of Mechanical Engineers, "Strength of Wrought Steels at Elevated Temperatures." Written for designers of power equipment, chemical apparatus and machinery operating at elevated temperatures, the book has tabular and graphical data covering tensile, creep and rupture properties of standard commercial grades of the material.

Report is in two sections, first relating to plain carbon and also alloy steels with molybdenum and up to 3 per cent chromium. Those materials having more than 5 per cent chromium are covered in the second section. Considerable tabular material and references as to sources are included in the book, which also has many curves and charts. The applicable ASTM standards for the various steels are given for each steel. Copies may be obtained from the ASTM at 1916 Race St., Philadelphia.

Head Drills 118 Holes

There seemingly is no limit to the size to which drill heads may be made. In a recently introduced model 118 spindles drill holes from $\frac{1}{4}$ to $\frac{5}{8}$-inch in diameter in large castings. With a drill head measuring 36 inches in diameter, the machine and its head are mounted on four posts and directly driven by a 15 hp 900 rpm motor.

A hydraulic ram in the base of the machine, made by Zagar Tool Inc., Cleveland, pushes the work pieces into the drills. Upon completion of drilling, the work platen lowers automatically to its original position, cycling being controlled hydraulically with electrical switches. Hydraulic oil reservoir and pump, electric motor and coolant reservoir are located in the welded steel base.

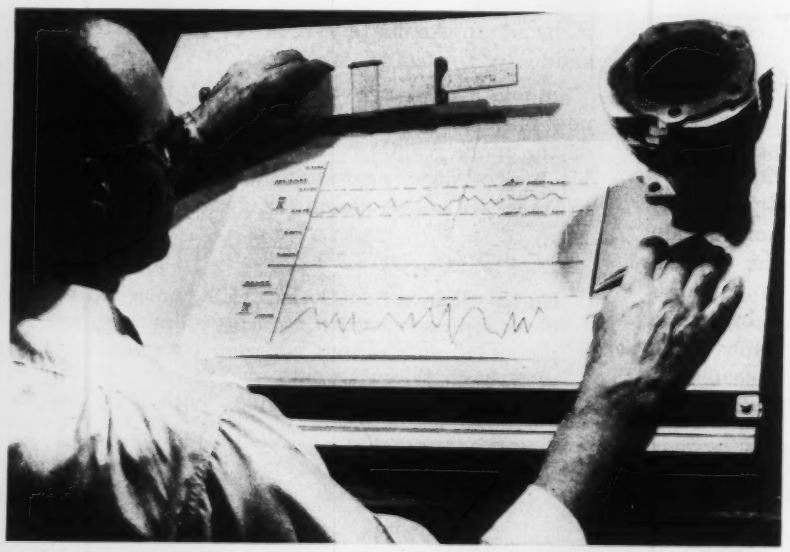
Machines are said to have the advantage of being able to drill large numbers of holes at one time which may be closely spaced. Extra spindles can be added to the drill heads and changes in hole spacing made by reboring at what is said to be a reasonable expense. One machine may be used to drill many different parts and if part designs become obsolete, the equipment reportedly can be salvaged for other work.

How To Determine Density

Constantly recurring in science and industry is the problem of determining density, used to identify substances and obtain relationships between density, chemical composition and thermal and mechanical treatments of materials. In an effort to shed additional light on the subject, National Bureau of Standards, is making available a circular describing 11 methods for determinations of densities of solids and liquids. It is available from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Wrenching Bolt Standard

Internal wrenching bolts, for applications where high strength is required under high temperature conditions, is the subject of a new American standard, announced by American Standards Association, New York. Developed jointly by American Society of Mechanical Engineers and the Society of Automotive Engineers, standard lists bolts in nominal diameters from $\frac{3}{8}$ to 2 inches.



SCIENTIFIC FORECASTER: This "X-bar" chart studied by Harold Klemm, chief inspector, Harley-Davidson Motor Co., Milwaukee, is one of the "tools" used in the company's statistical quality control system of predicting what's going to happen to a product's dimensions before it is too late to correct it. Here, chart statistics are being compared with dimensions of motorcycle cylinder bores. Object is to keep zigzag line in upper chart from straying off upper and lower limits. Lower range chart gives difference between highest and lowest reading of a sample of five

MESTA Forgings

Mesta Forge Shops are equipped to produce, from raw material to finished product, carbon and alloy steel forgings in all sizes required by industry, including crankshafts, marine parts, rotor shafts, rolls, pinions, pressure vessels, pump blocks, table rollers, coupling halves, spindles, gears, and many others.

The illustration shows a one-piece forged steel high pressure accumulator bottle for a 6,000-ton hydraulic forging press. It was produced complete in the Mesta Plant.

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FUNDAMENTALS OF STEELMAKING

NUMBER 27 OF SERIES

Another in a continuing series of articles on the making of steel and finishing it into products ready for the consumer. Each article is written by an outstanding authority in his particular field.

By C. W. BARRETT
Chairman of the Bar Mill Committee
and
Chief Roll Engineer
Republic Steel Corp.
Cleveland

PRODUCTION OF BARS

The author continues his discussion of the various type bar mills operating today and outlines typical problems encountered and their possible solutions in the rolling of special bar shapes

PART II

STANDARD bar shapes include angles, channels, tees and zees when their greater sectional dimension is less than 3 inches. They also include ovals, half ovals and half rounds. This group of products falls within the range of sizes that can be produced on 8 to 12-inch mills.

All shapes falling outside this range and description, with the exception of standard structural products, are known as "special bar shapes" and constitute the greater portion of the bar mill shape business. This latter type of product is discussed in this article.

Industry today is demanding more intricate shapes than in the past. Through this medium the manufacturers have reduced the amount of forging, machining and cold working required to produce a finished product. Where the volume business permits, hot rolled shapes are often the most economical.

Taking advantage of the many grades of steel now being produced, purchasers in many cases have found it possible to reduce the foot-weight of the section and still maintain the physical requirements. This quite often creates a hardship at the mill due to continuous alterations to roll and guide equipment, and naturally reduces the tons per hour.

Fig. 11 will give some idea of the types and ranges of special shapes bar mills are required to produce. The foot-weight on some of these sections will reach a minimum of 0.30 pounds per foot for the small mills, with practically no limitations on the heavy side.

Making the templates required to turn these shapes in rolls is a very tedious and exact operation. This type of work calls for a specially skilled man. As many as 8 to 10 different templates for fitting and tool grinding may be required for a single pass. In addition to this, rollers and inspectors on the mills require true gages, covering maximum and minimum specifications. Templates are an absolute necessity for checking the more intricate shapes. These working templates are checked with master templates periodically to assure the customer consistency of product.

Bar mills vary considerably in their designs. This all hinges around the products the mill is expected to produce. Quite often a mill that is ideal for common products such as rounds, squares and flats does not have the flexibility necessary for a good special shape mill. Usually this type of mill consists of a continuous or semicontinuous roughing train followed by about four 2-high finishing stands either looped or stranded.

Mills of this type do not provide enough looping or stranding passes to make the more difficult sections. Some of these special sections may require as many as eleven shaped passes. Naturally this mill is more costly to operate due to the help required for the additional looping stand. Consequently a mill designed for special shapes should be confined to that type of product as much as possible. Rollers on mills which roll a mixed product usually have more difficulties and more delays.

Straight-away semicontinuous mills are satisfactory in the larger mill group for special sections. One of the objections to a mill of this design is the floor area required.

This mill is superior to the 3-high or 2-high cross-

Fig. 11—Bar mill special shapes. Foot-weight on some of these sections will reach a minimum of 0.30 pounds per foot for the small mills. There are practically no limitations on the heavy side

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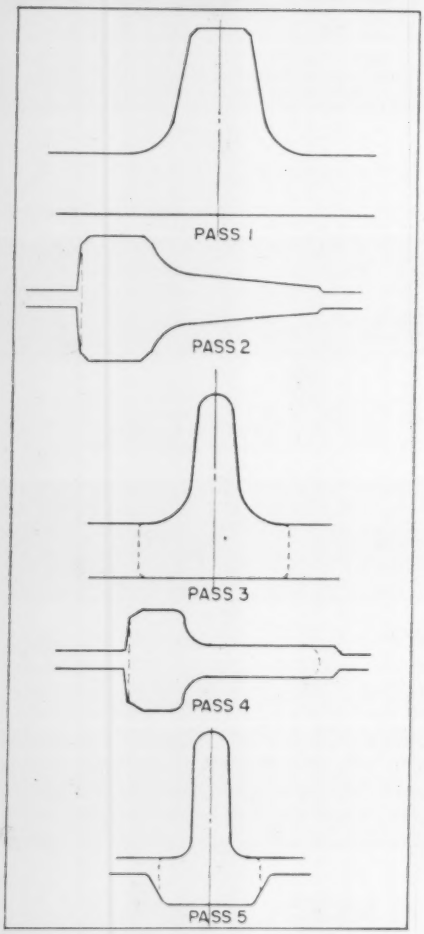

Fig. 12 — Design of a rail anchor section. The bar is turned 90 degrees before entering each successive pass. This gives definite control up to the finishing pass

country mills when rolling sections with web thickness under ¼-inch. The time required for the bar to pass through the straight-away mill is only a fraction of the time required on the other two types of mills. Consequently the product can be finished at a higher temperature. This is a distinct advantage in roll pass life and mill delay time.

Another type of mill that bridges the gap between the common type bar mills and the special section mills, but has a lot of limitations, is the continuous straight-away mill. All types of shapes cannot be produced on these mills economically. Economic advantage of this mill is due primarily to the increased tons per hour, providing the size of orders is large enough to warrant setting up on a mill like this.

This type of mill is provided with power-driven vertical rolls for edging purposes. The rolls provide good control on flats and can be used to advantage on round and square products, provided size and heat separations are held to a minimum. Unfortunately at the present time mills using vertical rolls are not suitable for double stranding of products. Double stranding means finishing two lines of bars through the mills at the same time. This is being done on some products on the older type mills which have been provided with double cooling beds or ample coiling facilities.

Special section inquiries are usually brought back to the mills by the sales division. In many cases the purchaser knows very little of the problems encountered by the steel producers. Because of the perplexity of the problem few standards can be established that are applicable. Quite often it is necessary to go back to the customer for certain concessions to be able to produce the section in a satisfactory manner. The problem of size tolerance that mills can be expected to adhere to must be submitted to the customer for his approval before any attempt is made to place the new section on the mill.

Due to irregularities of the shapes encountered, there are three methods by which shapes can be turned into the rolls; not always is there a choice between them. At this point the roll designer must draw on his past experience and knowledge of the flow of metals to determine which method is the most suitable. He must focus particular attention on tons per hour and yield.

Fig. 12 shows the design of a rail anchor section. This bar is turned 90 degrees before entering each successive pass and gives definite control on spread up to the finishing pass. This type of section has what mill men term a "dead hole" or "dead flange" as it may be. This term is applied to the portion of the section with three of the four surfaces sunk into

REPRINTS AVAILABLE

REPRINTS of previous individual chapters in the series "Fundamentals of Steelmaking" now may be obtained by addressing Readers' Service Department, STEEL, 1213 W. Third St., Cleveland 13, O. Prices range from 20 to 75 cents per reprint. Subjects covered in previous issues include:

No. 1, Production of Electric Arc Furnace Steel; No. 2, Scrap Iron and Steel; No. 3, Production of Open Hearth Steel; No. 4, Production of Tool Steel; No. 5, The Art of Roll Pass Design; No. 6, Production of Bessemer Steel; No. 7, Production of Metallurgical Coke and Resultant Coal Chemicals; No. 8, Production of Plates; No. 9, Production of Hot and Cold-Rolled Strip and Sheets; No. 10, Production of Tin Plate; No. 11, Production of Structural Shapes and Rails; No. 12, Production of Butt and Lap Welded Pipe, Conduit and Electric Metallic Tubing; No. 13, Production of Pig Iron; No. 14, Production of Seamless Steel Pipe and Tubes; No. 15, Production of Stainless Steel; No. 16, Iron Ore—Its Mining, Beneficiation and Reserves; No. 17, Transportation and Handling of Iron Ore; No. 18, Production of Wire and Wire Rods; No. 19, Production of Gray Iron Castings; No. 20, Production of Steel Castings; No. 21, Production of High Alloy Steel Castings; No. 22, Production of Wrought Iron; No. 23, Production of Forgings; No. 24, Production of Semifinished Steel; No. 25, Production of Merchant Shapes; No. 26, Production of Malleable Castings.

TABLE V
BAR SIZE ANGLES
(Dimensions in Inches)

Specified Length of Leg	Variations from thickness for Thicknesses Given, Over and Under: To 5/16, Incl.	Over 5/16 to 3/8 Incl.	Over 3/8	Variations from length of leg Over and Under
To 1, incl.	0.008	0.010	....	1/32
Over 1 to 2, incl.	0.010	0.010	0.012	3/64
Over 2 to 3, excl.	0.012	0.015	0.015	1/16

The longer leg of an unequal angle determines the size for variations. The out-of-square tolerance in either direction is 1½ degrees.

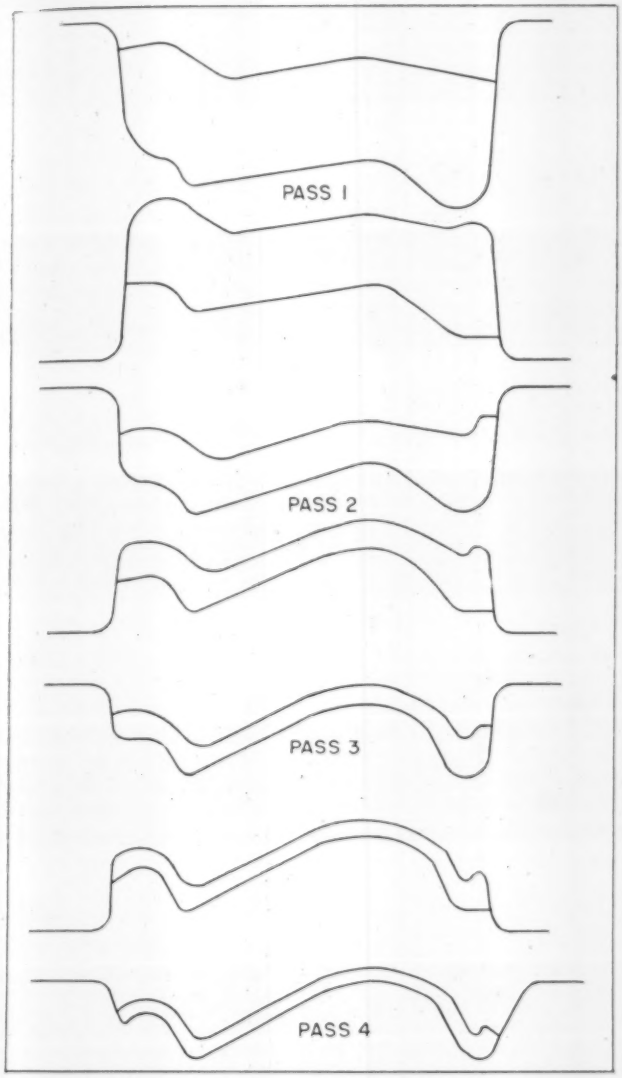

Fig. 13—Rim section requires tongue and groove rolls. Where possible, this type of section is avoided

one roll. Guides are a serious problem on dead hole design as the bar must be stripped from the roll on the delivery side of the mill to prevent collaring the mill.

Fig. 13 shows a rim section that requires tongue and groove rolls. Where possible this type of section is avoided, but there are plenty of sections that can have no alternative. Roll passes for this type require heavy dressing to bring them back to the original sizes and are costly to maintain.

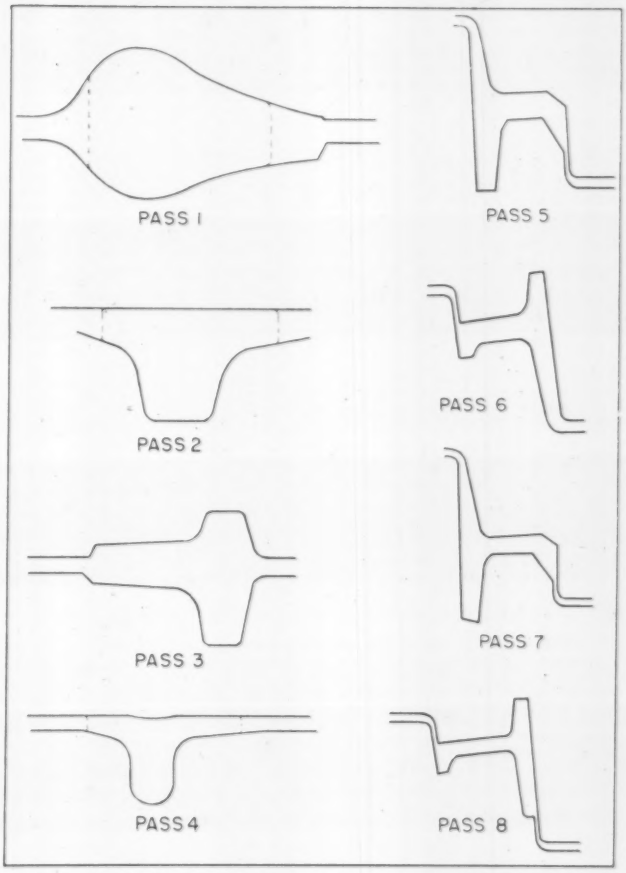

Fig. 14—Window sash section design with alternating collars. This section is produced by a rolling procedure known as diagonal rolling

Fig. 14 shows a window sash section design with alternating collars. This section is produced by a rolling procedure that is known as diagonal rolling. Passes for sections rolled in this manner are machined back to original shape with a minimum loss in roll diameter. Little difficulty is experienced with the bar following the rolls on the delivery side of the mill.

TABLE VI
BAR SIZE CHANNELS
(Dimensions In Inches)

Specified Size of Channel	Variations from Size, Over and Under — Depth of Section	Width of Flanges	Thickness of Web for Thickness Given: To $\frac{3}{16}$, Incl.	Thickness of Web for Thickness Given: Over $\frac{3}{16}$	Out of square* of either flange per inch of flange width
To 1½ incl.	$\frac{1}{32}$	$\frac{1}{32}$	0.010	0.015	$\frac{1}{32}$
Over 1½ to 3, excl.	$\frac{1}{16}$	$\frac{1}{16}$	0.015	0.020	$\frac{1}{32}$

* For channels ⅝ in. and under in depth, the out-of-square tolerance is $\frac{3}{64}$ in. per inch of depth.
Measurements for depth of section and width of flanges are overall.

TABLE VII
BAR SIZE TEES
(Dimensions In Inches)

Specified Size of Tee	Width or Depth: Over	Width or Depth: Under	Thickness of Flange: Over	Thickness of Flange: Under	Thickness of Stem: Over	Thickness of Stem: Under	Stem out of Square*
To 1¼ incl.	$\frac{1}{64}$	$\frac{1}{64}$	0.010	0.010	0.005	0.020	$\frac{1}{32}$
Over 1¼ to 2 incl.	$\frac{1}{32}$	$\frac{1}{32}$	0.012	0.012	0.010	0.020	$\frac{1}{16}$
Over 2 to 3 excl.	$\frac{3}{32}$	$\frac{3}{32}$	0.015	0.015	0.015	0.020	$\frac{1}{32}$

* Stem out of square is the variation from its true position of the center line of stem, measured at the point. The longer member of an unequal tee determines the size for tolerances.
Measurements for both width and depth are overall.

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Sections of this type and design create more end thrust than either of the other two methods.

Establishing the pitch line on a new section is not a very difficult task but it must be reasonably accurate. Passes not properly located in the rolls create a back lash in the gearing, spindles and coupling boxes. This adds up to increased maintenance cost. A simple way to locate pitch lines is as follows: Draw or trace the complete pass on a heavy piece of cardboard and then cut out this piece, which represents the section. By this time the approximate angle at which the section must be tilted to have the bar deliver freely from the rolls, has been determined. Then a temporary horizontal line is drawn through the section in the location the pitch line is expected to fall. The cut-out is then placed on a thin steel scale or any thin object supported on edge and the cardboard template balanced. By measuring from the point of balancing to the horizontal line the exact location of the center of gravity is established. This is the pitch line.

Most designers prefer to hold the top roll to the large side on a lighter foot-weight section. This causes the delivering bar to hug the table. On the heavier sections the larger roll is usually carried on the bottom to raise the bar off the table rollers. Main reason for the latter is the preventive maintenance on table rollers and equipment. A common practice is to carry the pitch line in the true position. Any deviation away from this is a compromise, however. When using over and under passes on a 3-high stand, both passes must be considered in establishing the pitch line.

Considerable difficulties are encountered on the mills with the variations in the different bar sections. Bars with asymmetrical contours have a tendency to camber or twist on the cooling bed. Some mills have straightening machines in the line between shears and cooling beds. Others have the straightening machines separate; bars are straightened after leaving the shear. Either operation is costly, but commercially straight bars must be maintained.

Tolerances for bar mill shapes in nearly all cases are based on those established by American Iron and Steel Institute, see the accompanying tables.

Tolerances on half-rounds, ovals, half-ovals, and other special bar size sections not included in the AISI specifications are commonly negotiated between purchaser and producer.

Sections are not always desirable products. Quite often the amount of mill grief and loss of time in producing some of the more difficult sections, when compared with standard bar mill products, must be given very serious consideration. Usually the tons per hour compared to the same foot-weight is less and naturally the yields are lower.

Measures Microscopic Particles

Fineness of materials ranging from 0 to 100 microns may be determined by the Bacho micro-particle classifier, made by Harry W. Dietert Co. of Detroit, under license by Enkoping Verkstader of Sweden. It may be used to test the fineness of material passing through the U. S. Standard No. 140 testing sieve which has 105 micron openings. A sample of fine material may be divided into 8 or more particle size separations by passing it through the classifier.

Each particle size separation is caught in a smooth metallic container so that it may be weighed and the percentage of that material may be calculated. Each separation may be retained for further study, such as chemical analysis or microscopic study. As a rule, a 10-gram sample is used although smaller samples are acceptable.

Standardized Gears Cut Costs

By making use of standardized Duti-Rated gear sets, Foote Bros. Gear & Machine Corp., Chicago, believes that it is possible to reduce engineering costs formerly required in designing special gears. By selecting gears from standardized tables made available by the company, it is said to be unnecessary to allow for extra strength and capacity as a precautionary measure. Other advantage is quicker delivery.

Combining file-hard tooth surfaces with ductile cores, the company is producing gears having load-carrying capacity and wear life reported to be comparable to commercial gearing but permitting a reduction in size and weight. Because of these savings, the manufacture claims lower prices are possible. Gears are available in approximately 200 combinations with ratios from 1.5 to 9.3 and center distances from 2.7 to 15.5 inches. Horsepower capacities range from fractional up to several hundred.

Film Stops Acid Attacks

Capable of withstanding up to 140° F when used unprotected in liquid exposure and up to 220° F in fume exposure is a flame-sprayed resin film for application to steel surfaces. Called Nukemizing, and developed by Nukem Products Corp., Buffalo, N. Y., the process utilizes a compounded mixture of polyethylene resins with added modifiers to improve adhesion, hardness and thermal properties of the finished membrane film.

Coating is reported to have a resistance to nearly all acids, alkalies, salt solutions and some solvents. A surface so covered is said to have no pinholes or voids through which corrosive liquids can reach unguarded steel. In an effort to reduce the application costs, the company has developed the process so that it can be effected in the customer's plant. By not having flammable solvents, there is no fire hazard and objectional odors or fumes are eliminated.

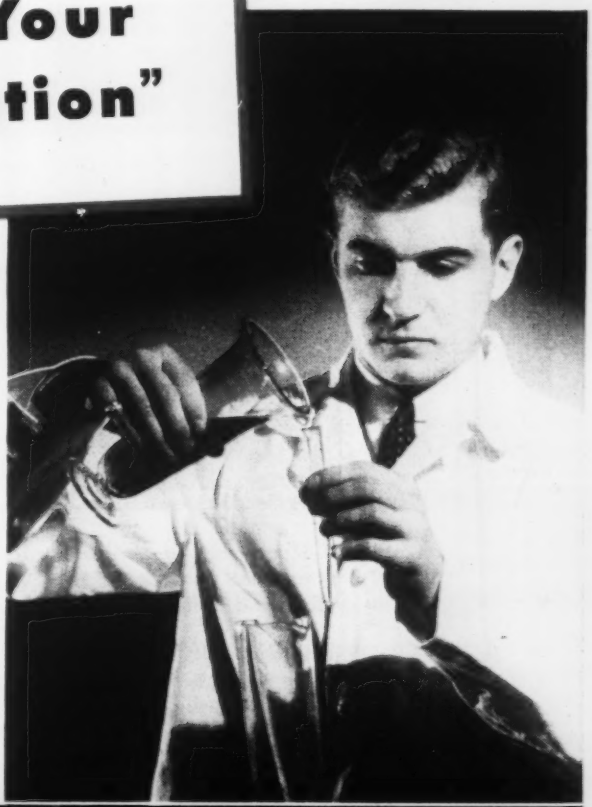
Look—Save Those Toes!

Intended to be a forceful visual tool for impressing upon workers the importance of protecting toes and feet with safety shoes, is a sound motion picture produced by Hy-Test Division, International Shoe Co., St. Louis. Entitled "One Ounce of Safety" the picture's aim is to reduce the more than 60,000 foot injuries occuring annually in plants throughout the country.

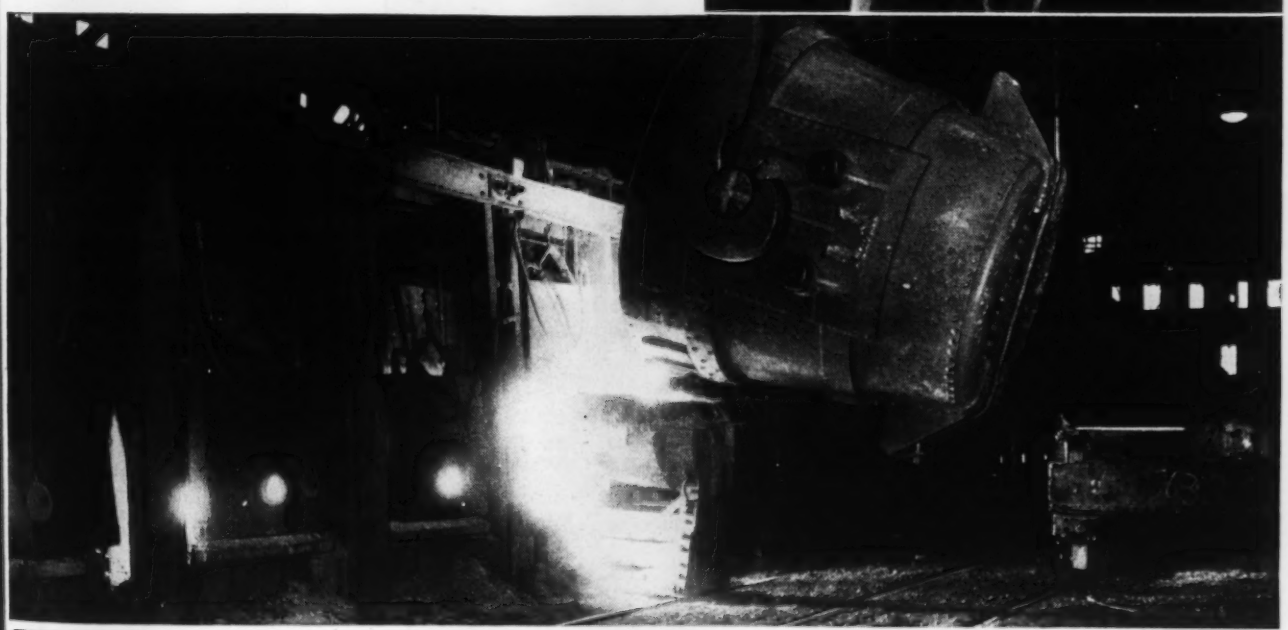
Offers Steel Products Manual

American Iron & Steel Institute, New York, is making available section 24 of the steel products manual on stainless and heat resisting steels. Like the other manuals in the series, this one is available at 25 cents per copy and contains tolerances, methods of inspection, sampling and chemical analysis, definitions of technological terms and other related subject. The latest provision in manufacturing procedure are incorporated in the 150-page section.

Steels Made to Your "Product Prescription"



Just as an expert pharmacist mixes prescriptions with precision, Wisconsin steelmen produce "H" steels with guaranteed hardenability bands. Wisconsin "H" steels can be heat treated to meet a broad range of hardenability requirements. They're made to your specific "product prescription." Contact our sales and metallurgical staffs for additional information.



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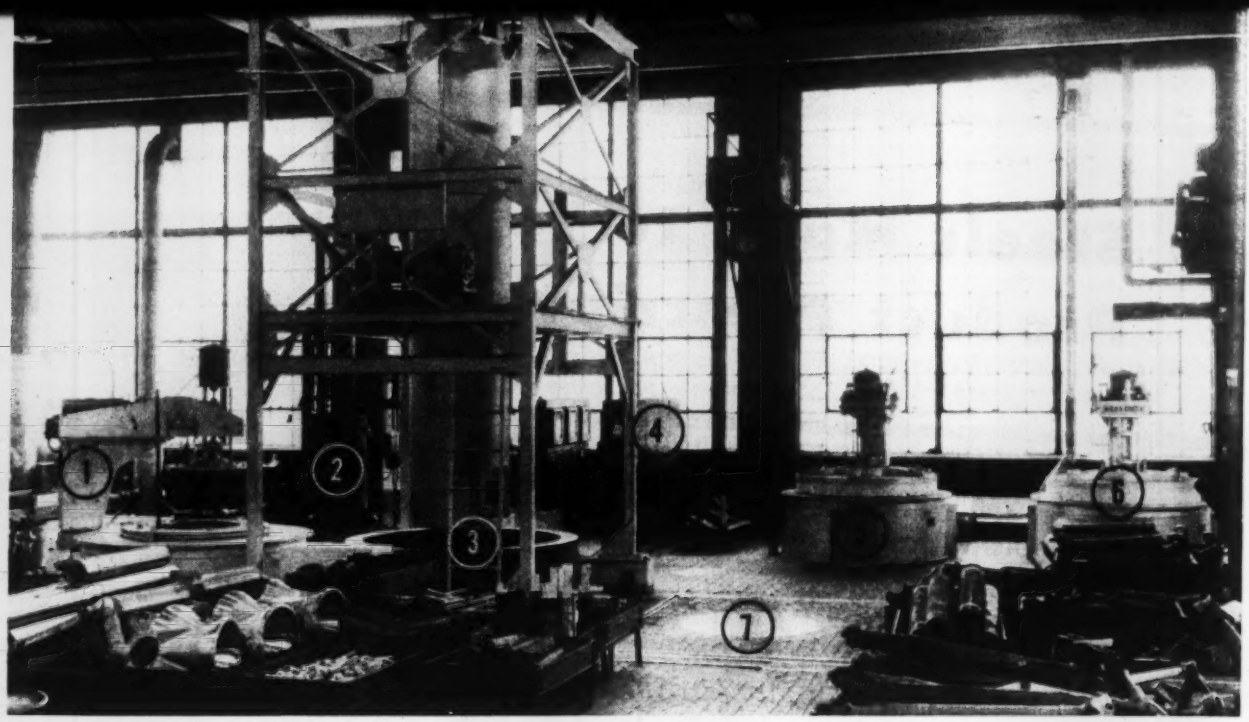


Fig. 1—Heat treating equipment for heavy forgings. (1) Main hardening furnace, (2) atmosphere generator, (3) quench tank, with hood and gantry crane, (4) two instrument and switch boards, (5 & 6) stress-relieving and draw furnaces, (7) cover over 13-foot deep cooling pit

How Cleveland Pneumatic Heat Treats Giant Forgings

Designed for very large aircraft landing gear forgings, equipment has double the capacity of the largest single furnace used previously

CLEVELAND Pneumatic Tool Co. recently completed a $130,000 heat-treating installation designed especially for very large aircraft landing gear forgings. The equipment has about double the capacity of the largest single furnace previously in use at this Cleveland facility.

Units All Large Capacity—Principal unit is a pit-type hardening furnace designed and built to Cleveland Pneumatic specifications by Hevi-Duty Electric Co. The furnace has a working capacity of 48 inches diameter by 13 feet deep. Other units in the installation include a stress-relieving furnace, a draw furnace, both with working capacity to match the hardening unit, an atmosphere generator, and a special cooling pit.

The three furnaces each operate at heats and speeds more than adequate for the most exacting aircraft requirements for the largest landing gear forgings. Furnaces are designed to permit maximum interchangeability of replacement parts, assuring ease and low cost of maintenance.

Three Control Zones—The 200 kilowatt input to furnaces is divided into three zones of control in the hardening furnace, and two zones in the draw furnaces. Control instruments for each zone include Leeds & Northrup strip chart recording controlling potentiometers coupled to interrupters and soaking timers to permit automatic timing control.

Atmospheric Hood Movable—Included also is a giant-size quenching tank, designed and built by Cleveland Pneumatic, provided with a movable atmospheric control hood which is lowered over the work when withdrawing from the hardening furnace. The hood surrounds the charge during the transfer from furnace to

Fig. 2—General view in one end of heat treating department. Hevi-Duty furnaces in center. Lindberg furnaces against wall

quench, thus providing better control. A special gantry crane handles the work and hood.

The quenching tank is designed to permit manipulation to change the quench to suit the design and requirements of the part being heat-treated.

Solves Dust Control Problems

Successful solution of dust control and moisture penetration problems is a three-step engineering problem: 1. Selection of proper liquid diffusion compounds for the work; 2. controlled proportioning of the compounds in the carrying medium; 3. application of the solution at the right place to produce desired results automatically, effectively and economically.

Recognition of this three-fold problem led Johnson-March Corp., Philadelphia, to develop a new liquid diffusion method which provides low cost dust control and material conditioning. It is based upon the scientific application of liquid diffusion compounds and is said to have practical, low cost applications in coal mines to eliminate dust at cutting face, tipple and rotary dump; in power plants to control dust in belt galleries and stockpile; in coke plants for better packing of coal storage piles and control of bulk density in the ovens; in rock crushers, cement mills, brick and tile plants; in the foundries for controlling dust in speeding penetration of moisture or oil as a conditioner.

Broaching in Clusters

An itemized list of the $3½ million machine tool expenditure in the truck engine production line of Reo Motors, Lansing, Mich., would show a 15-ton, 66-inch stroke-dual ram broaching machine, made by Colonial Broach Co. of Detroit. This particular machine is being used for finishing bearing caps at the rate of 360 per hour. The caps are cast in clusters of four each and are finished in this form. With the exception of loading and unloading, the machine cycle is completely automatic.

After the parts are loaded into the fixture and hand clamped, a pushbutton starts the fixture forward into cutting position and the half round surface, joint face, outside pilot fit and corner chamfers of the casting are broached. At the same time, the fixture on the right shuttles out for unloading and reloading with a casting finished in the left hand fixture. This part is hand clamped while the right ram returns to a stop. The start button is pressed again and the right hand fixture moves to cutting position and the tops of the bolt bosses are broached on all four caps. At the same time the left hand fixture moves out for unloading and loading and left ram returns to the start position.

The second operation on the right hand ram utilizes the broached joint face for locating, centralizing the part by an equalizer which registers in the half round. Walking clamps are employed in both fixtures. With normal operation calling for a broach speed of 30 fpm using a water soluble coolant, it is said that 90 castings per hour may be finished at 85 per cent efficiency. They are later cut apart to form the 360 bearing caps.

Cast Heat Resistant Alloy Extends Quenched Carburizing Tray Life 80%

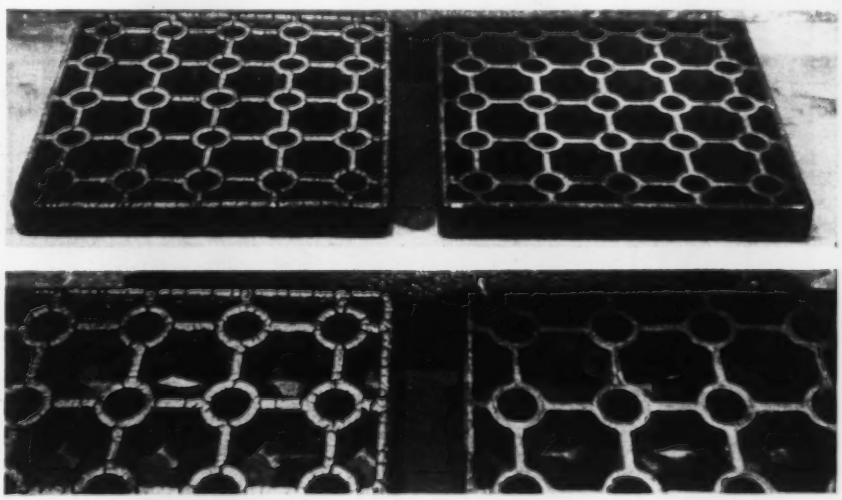
DETERIORATION of cast grid trays utilized in carburizing service where oil quenching is involved has been one of the most vexing problems faced by the producers of heat resistant alloy castings and large users of such equipment. Failure is generally by multiple surface checking caused by carburization and stress reversals leading to cracking. This mechanism has been termed "thermal fatigue" since the most severe stresses are the result of thermal gradients during heating and quenching.

Many Materials Tested—The Electro-Alloys Division of the American Brake Shoe Co. has field tested over a period of five years a wide range of alloy types for this service including 35 per cent Ni; 16 per cent Cr (ACI* Type HT); 38 per cent Ni; 18 per cent Cr (ACI Type HU) and 60 per cent Ni; 12 per cent Cr (ACI Type HW), the first two materials with and without additions of special stabilizing elements.

Field test and production experience are now available which indicate a 70 per cent improvement in performance of the specially modified 38 per cent Ni; 18 per cent Cr alloy as compared to the conventional 35 per cent Ni; 16 per cent Cr and 38 per cent Ni; 18 per cent Cr alloy. The special modification has also been applied to the 35 per cent Ni; 16 per cent Cr type with success.

Life Extended 80%—Significance of the improvement is illustrated in the accompanying photograph showing the same tray casting as was used in a large automotive plant in 35 per cent Ni; 16 per cent Cr (on the left) and the specially modified 38 per cent Ni; 18 per cent Cr alloy (on the right) after ten months service in a highly stressed tray application involving cycles of carburizing at 1675° F and oil quenching. The special alloy trays in this case will provide at least an 80 per cent improvement in life.

* Alloy Casting Institute type designations.



Above—Tray castings used in a large automotive plant. Left, 35 per cent nickel, 16 per cent chromium material. Right, specially modified 38 nickel, 18 chromium alloy after ten months service in a highly stressed tray application involving carburizing at 1675°F and oil quenching
Below—Closeups of the same trays

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Boring Fixture

(*Concluded from Page 86*)

The two clamps which hold the index base on the base are then loosened. The indexing pin is next raised by its knob end and the index base rotated on the axle shaft until the indexing pin will enter the next position. The two clamps are then tightened to hold the index base in place and the next hole is machined. The two clamps are again loosened and the index base rotated to the next station as determined by the next hole and the two clamps again tightened.

After the correct changing of tools in the machine head the 1.375 inch hole is now machined with a 1¼-inch drill, the tool changed and the hole bored and reamed to 0.040-0.043 under the 1.375-inch diameter. Fig. 3 shows the Bullard vertical turret lathe and tools set up for performing these machining operations.

To remove the finish machined center link it is necessary only to turn back the jam nuts and screw back the set screws on the index base for a short distance, screw back the nuts on the clamp studs on the index base so that the clamps can be moved out of the machining position and the workpiece can be lifted out of the index base.

New Plow Bolt Designs Offered

Intended to reduce the number of plow bolt sizes now in use and to facilitate production and availability of stocks of standard sizes without stocking quantities of special bolts is a new American standard, B18.9-1950, announced by American Standards Association, New York. Sponsored by the American Society of Mechanical Engineers and the Society of Automotive Engineers, it gives features of the new head design to be considered in their utilization.

Chromed Rods Are Workable

High corrosion resistance, high luster finish and ease of fabrication are claimed for a new type of chromium plated steel rod recently announced. Suitable for bending, forming, spot welding, butt welding or swaging without damage to the chromed surface, the rods, made by Kenmore Metals Corp., Jersey City, N. J., are said to be suited for the manufacture of such parts as furniture, bicycles, refrigerators, various types of racks and other formed rod applications.

Rods are produced by a two-step electroplating process, nickel being first bonded to a steel rod. Chromium is then electroplated over the nickel to provide a finish which is said to be hard, permanent and having a high luster. Use of the nickel underplate, which is reported not to chip or flake, provides a corrosion resistant base which is permanently bonded to the steel core and the chromed surface.

Rods are available in diameters ranging from 11 AWG to ⅛-inch in any commercial length and with nickel and chromium plating to specified thickness. The company reports that all rods are suitable for bending equivalent to the limitation of unplated steel wire or rod of the same diameter .

Seal Makes Pumps Self-Priming

Function of the mechanical shaft seal on self-priming centrifugal pumps is to prevent leakage of liquid or entrance of air where the rotating pump shaft enters the stationary pump housing. On units built by Marlow Pumps, Ridgewood, N. J., this is done by means of two perfectly flat seal surfaces which are run together and held in sealing contact by a rubber seal collar of Hycar rubber, a nitrile rubber manufactured by B. F. Goodrich Chemical Co. Cleveland.

Collar has three purposes: To drive the rotating seal ring; keep it in contact with the stationary seal ring; and at the same time seal the rotating ring to the pump shaft. Pumps of this type see many uses in construction, mining, petroleum and other industries and are built to deliver up to 4000 gallons of liquids per minute, developing pressures as high as 150 psi.

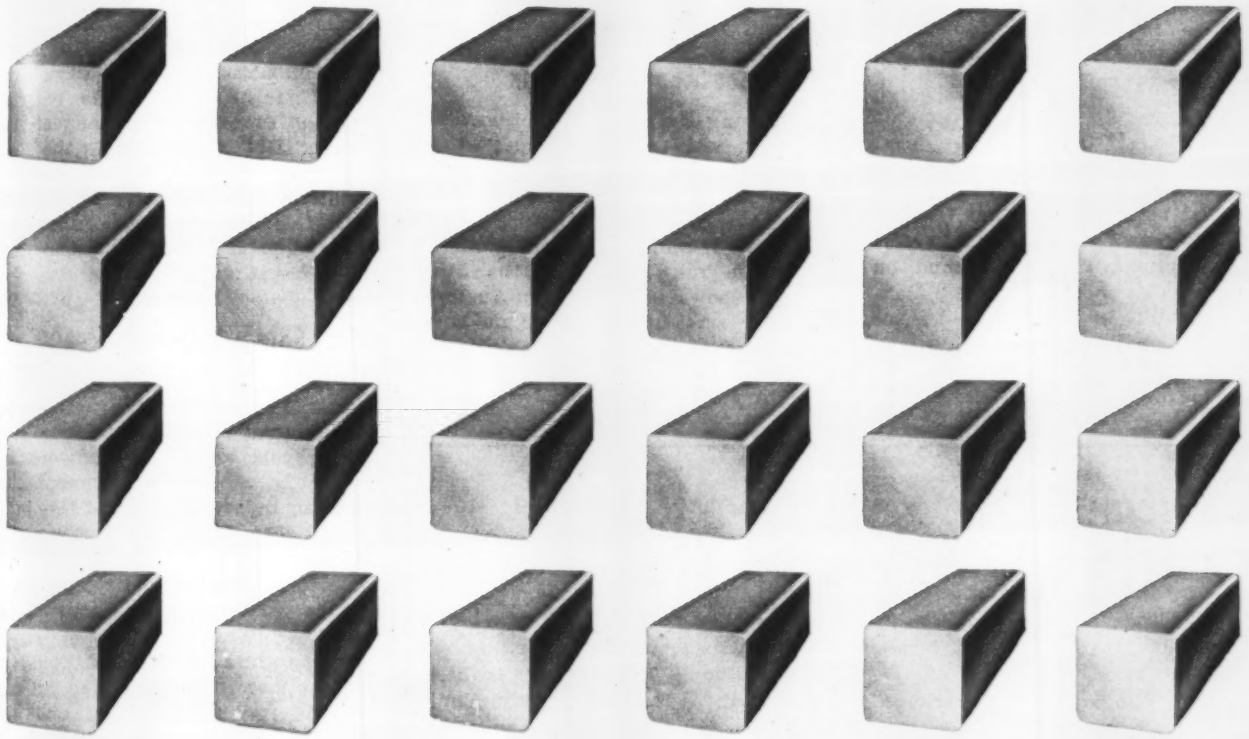
The rubber seal collar, to effectively seal, has to slip on the pump shaft and not vulcanize to it. Resilience, good abrasion resistance, high tensile strength, low compression set at high temperatures and good oil and heat resistance are properties required. It is said that collars are but slightly affected by exposure to high temperatures which often occur when the pump is allowed to run dry.

Patent Classification Outlined

An outline of the patent classification index in the A. F. Davies Welding Library, Ohio State University, Columbus, is provided in Engineering Experiment Station bulletin No. 140. It explains the operation and use of the system which has as its purpose providing information on

TRIMMED—BOTH TIME AND COSTS: Grinding operations are reduced to one-fifth the usual amount needed by this hot trimming device employed by Illinois Central in its continuous welded rail program in South Chicago. The hydraulic machine trims the weld area to a close tolerance at a temperature of about 2000° F. If temperature drops, trim area is quickly reheated with an oxyacetylene blowpipe, the hard-faced blades making cuts while the metal is being reheated. Developed by Oxweld Railroad Service Co., Unit of Union Carbide & Carbon Corp., the device also provides important savings in grinding wheels and man-hours

Are all these forging bars the same?



Here's a clue: they're all TIMKEN®

IT doesn't take a metallurgical expert to answer the above question. Not with *that* clue.

You're always sure of uniformity in each analysis of Timken® forging steels—from bar to bar and heat to heat. That's because Timken controls the quality *completely* and *rigidly* through every single step of manufacture.

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welding patents to industrial organizations and educational institutions. References are given on the fundamental patent and welding processes, materials and equipment as well as on patents on industrial applications of welding.

Carbon Steel Piping Prices

Base prices per 100 feet of average and minimum wall hot finished and cold drawn seamless carbon steel pressure tubing may be found on master price sheets issued by Babcock & Wilcox Tube Co., Beaver Falls, Pa. Identified as price schedule A, sheets cover cut length tubing produced from open hearth steel having an average carbon content within 0.10 to 0.25 per cent and having outside diameters ½ through 10¾ inches and wall thicknesses of 0.035 through 1.000 inch.

Produces Machining Films

Realizing the value of motion pictures in visual education and edification, Bullard Co., Bridgeport, Conn., has produced and is making available three 16 mm black and white sound films. In 27 minutes, one of the films, "Man-Au-Trol, Master of the Machine," shows how the Man-Au-Trol vertical turret lathe is set up and how it operates, either automatically or manually.

"Three For One," running 18 minutes, describes the setting up and operating of the Man-Au-Trol three spindle model 30H lathe. Illustrated are adaptations for automatic or manual production, how Man-Au-Trol controls the cutting tools through their automatic cycle. The third film, of 15 minute duration, is entitled "Bullard Pioneers Interchangeability Without Jigs" and describes the Bullard spacer, a development said to eliminate cost and delay of making jigs. This film, like the other two, shows operational sequences and makes use of animation.

Chart Solves Sweating Problems

Is your plant constantly plagued with cold-surface sweating of piping, ducts, tanks and other vessels containing cold air or low-temperature fluids? In an effort to combat this problem, Industrial Mineral Wool Institute, New York, has developed an alignment chart on which the minimum insulation thickness to prevent surface condensation is easily determined.

Temperature of the cold liquid or gaseous material in the pipe or vessel, the relative humidity and the temperature of the surrounding air are the conditions at each particular cold surface which determine the minimum insulation thickness which prevents sweating. Because it more than covers the practical ranges of temperature and humidity, the chart is said to be applicable to any cold surface.

OK Given Wire Rope Standard

Provision for a one-third reduction in the variety of wire rope stock items is in the revision of simplified practice recommendation 198-43, wire rope, according to National Bureau of Standards. Effective June 15, 1950 and identified as R198-50, the revised recommendation adds a new table and effects a further reduction in stock items, and includes sizes, constructions, grades and breaking strengths of the majority of tonnage of wire rope.

The major production and use of wire rope is covered by four different rope constructions, where the reduction in variety is from 352 stock items to 182. Overall reduction in variety of stock items is from 987 to 657.

New, Revised SAE Specs

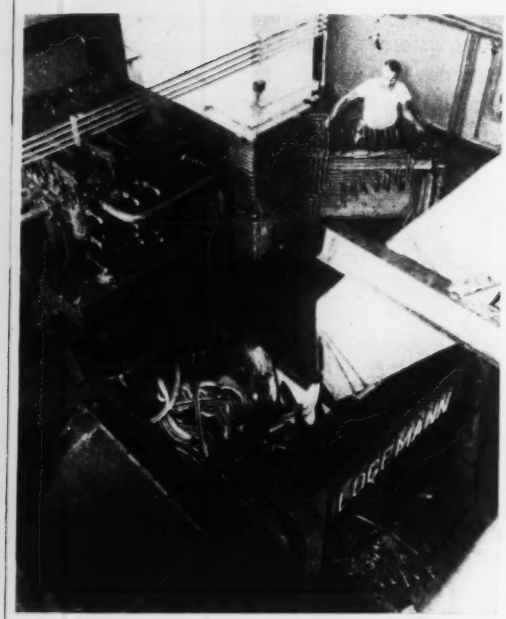
Society of Automotive Engineers, New York, has issued six new specifications and 37 revisions of former specifications on aeronautical materials. Complete set and individual specification are available.

Conveyors Take Scrap for a Ride

SCRAP in Chevrolet's pressed metal division, Cleveland, literally goes for a long "ride" before ending up "crunched" into a compact bundle by a huge baler.

System employed to "package" trimmings from fenders, hoods, panels and other stampings coming from the presses is a good example of how to keep scrap away from operating areas and dispose of it on an automatic basis.

Simple and efficient, the system involves movable power conveyors, employed as feeder lines, a main "trunkline" conveyor and a latest type baler built by Logemann Bros. Co.



Hydraulic pumps powered by a 125-hp motor furnish fluid pressure of 2500 psi to power various actions of this huge scrap baler. View shows baler box which is 48 inches wide, 42 inches deep and 100 inches long

No Manual Effort—Here is how the scrap is handled: Trimmings from the various presses, strung out for a quarter of a mile in the plant, first are dropped into the movable power conveyors. These are spotted to receive trimmings and eject them through openings in the floor to a main subfloor conveyor. The latter, which is the central conveyor, travels beneath the floor the entire length of the plant, collecting trimmings from the feeder lines. At the far end of the building it travels up an incline to deposit the material in a large bin from which scrap is fed into the baler hopper.

Bundling Is Automatic—From the hopper, a hydraulically-controlled unit, shown at left in the photo, the trimmings are dropped into the baler's box. Once the scrap is charged, air valves at the operator's station control hydraulic units which slide the cover across the box and actuate three rams. Two of these compact the bundle. The third raises it after the cover is retracted.

As each bundle reaches the level of the discharge chute, the cover is advanced again. A shoe attached to the left of its leading edge bumps the bundle down the chute to a conveyor that transfers it to a loading platform outside the plant where cars are spotted to receive the material. Bundles processed by the baler weigh from 600 to 1500 pounds, depending upon the shape of scrap pieces involved.

Rings Hot Pressure Welded

(*Continued from Page 89*)

very efficient for this type of work. They are shaped like a letter "C" with a hinge in the middle of its back. Strap iron braces minimize distortion of the jig during pressure application, and aid also in holding the loose part in the jig until pressure is applied. Lugs for attaching the jig to the pressure and stationary heads of the upsetting machine are installed opposite each other on the open side of the jig. Flashwelding closed rings is very difficult due to the huge current losses bypassed through the solid body of the ring.

Rings Flash-Heated — Immediately after welding, rings to be machined are flash-heated to red temperature, then forced down over a conical mandrel to true the circular shape. This truing process provides also a stern though qualitative tension test on the weld itself. After the rings have been trued, they are furnace-annealed prior to machining.

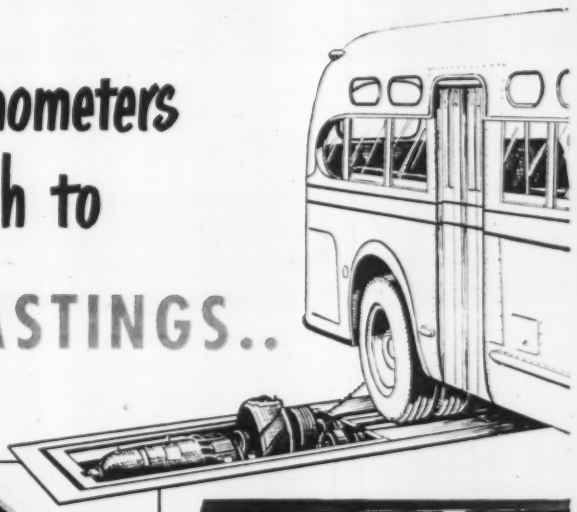
The amount of upset in hot pressure welding is approximately equal to the burn-off in flash welding, and depends on the wall thickness of tubing and the cross-sectional area of solid stock. The match between the butting surfaces to be welded is less critical with mild steels, but grows in importance with high alloy stocks. Just prior to welding, these butting surfaces should be thoroughly cleaned. This is accomplished by swabbing them with ether.

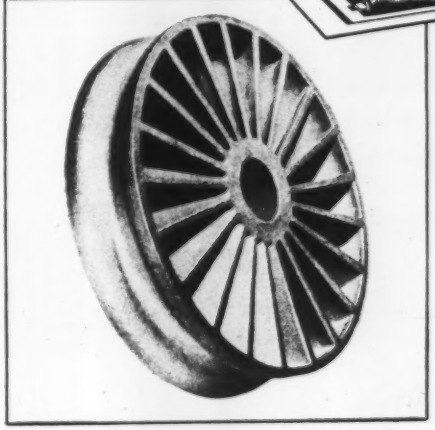
Good Hardness Characteristics — In studies regarding the hardness characteristics through the weld area, using SAE 3140 steel as the material, it was found that in the "as welded" condition hardness values varied from 87.8 Rockwell B in the parent metal to a maximum of 98 Rockwell B in the hardest portion of the upset metal. Flame normalizing reduced this variation from 84.9 to 87.2 Rockwell B. After furnace normalizing, maximum variation was from 82 to 84 Rockwell B.

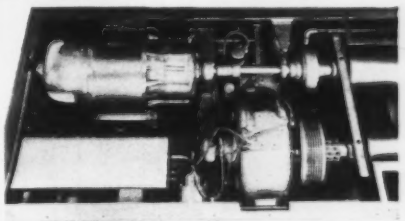
Slate demonstrated that a machined pressure weld cannot be detected by the eye alone. After etching, the flow lines of the upset metal become apparent, but even then there is no clean demarcation or weld line visible. A properly executed hot-pressure weld leaves no chance for the inclusions, gas and blow holes that continually haunt fusion welds.

Upset Forging on Same Equipment —Upset forging on the hot-pressure welder as accomplished in the Slate Co.'s shops is but a variation of pressure welding itself. The part to be upset is placed in the movable head

Dynamometers switch to UNITCASTINGS..







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- GREATER SAFETY

KEEP BUSSES IN TOP RUNNING EFFICIENCY!

This Bennett-Feragen Dynamometer, designed for testing the horsepower of internal combustion engines, helps keep bus transit systems at peak operating efficiency. In actual testing operations, however, parts of the Dynamometer rotate at very high speeds. The illustrated impeller was switched to Unitcastings from other metal products to gain greater strength with less danger of breakage and provide greater testing safety. If your problem concerns special alloys, difficult casts, close tolerances, see what Unitcastings can do to build quality into your product.

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Give us a chance to offer a "cast steel" answer for your parts problem. Our suggestions while your product is in the design stage will pay continuous dividends. Write or call today. Unitcast Corporation, Steel Casting Division, Toledo 9, Ohio. *In Canada:* Canadian-Unitcast Steel, Ltd., Sherbrooke, Quebec.

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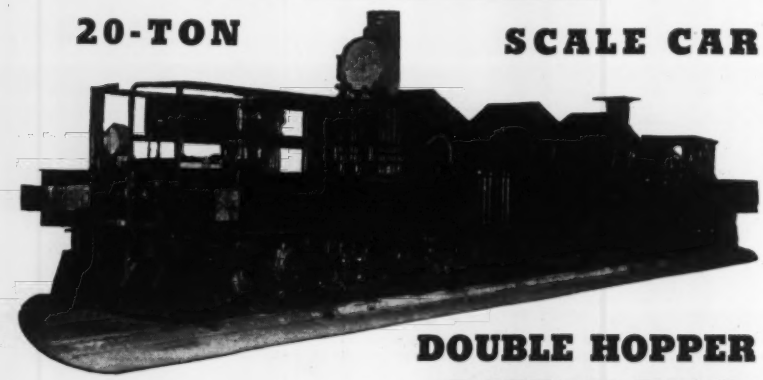
ATLAS

Scale Cars

DESIGNED AND ENGINEERED FOR YOUR SPECIFIC NEEDS

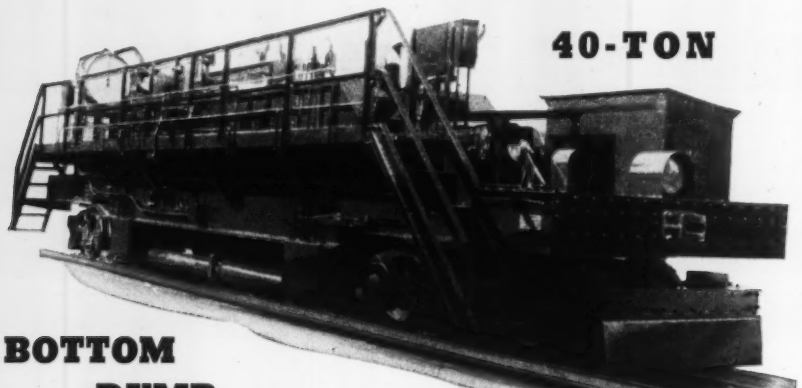
20-TON SCALE CAR



DOUBLE HOPPER BOTTOM DUMP

Car has Atlas underslung suspension scales with Atlas 24" scale Dial with chart recording. Air brakes and air-operated discharge gates. Cast steel side-frame trucks with Roller Bearings.

40-TON



BOTTOM DUMP SCALE CAR

Car has anti-friction bearings throughout, including axle mountings. Car has foot operated "Dead Man" control feature with air brakes inter-locked to apply automatically. Provided with ATLAS all-steel scales and 30" indicating dial. Type printing recorder attachment provides automatic weight registration at skip pit. All standard safety features provided including red marker lights and lights for illuminating the front of the bin.

Atlas Engineering Service is always at your service

THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

of the machine and heated with the same heating head. This heating head is oscillated far enough back on the part to reduce all metal within upset travel distance to a plastic condition.

When the right metal temperature is reached, the part is upset against a flat, cold mandrel mounted in the stationary head of the machine. If desired the metal can be upset into a die approximating the shape of the finished part, thus saving material and subsequent machining time.

The five variables encountered in hot-pressure welding are: (1) Amount of upsetting pressure required; (2) upset travel distance; (3) oxygen flow; (4) acetylene flow; and (5) heating time. By using flow meters these variables can be reduced to constants for each job of repetitive welding. Of course, the pressure welder must incorporate automatic stops and maximum pressure controls for automatic, precision work.

CALENDAR OF MEETINGS

† *Denotes first listing in this column.*

Aug. 14-16, Society of Automotive Engineers: West coast meeting, Biltmore Hotel, Los Angeles. Society headquarters are located at 29 W. 39th St., New York 18.

Aug. 16-18, Third Western Packing and Materials Handling Exposition: Civic Auditorium, San Francisco. Additional information from Clapp & Poliak Inc., 341 Madison Ave., New York 17.

Aug. 28-31, American Mining Congress: 19[illegible] Metal Mining Convention and Exposition, Salt Lake City, Utah. Headquarters of AMC: Ring Bldg., Washington 6, D. C.

Sept. 5-9, American Chemical Society: National Chemical Exposition, Chicago Coliseum. Sponsored by Chicago Sections, ACS, 86 E. Randolph St., Chicago 1.

Sept. 11, Society of Automotive Engineers: Tractor meeting, Hotel Schroeder, Milwaukee. Society headquarters are at 29 W. 39th St., New York.

Sept. 11, Society of Automotive Engineers: Aeronautical meeting and aircraft engineering display, in Los Angeles. Society headquarters are at 29 W. 39th St., New York.

Sept. 13-15, Porcelain Enamel Institute: Twelfth Annual Forum, University of Illinois, Urbana, Ill. Institute is located at 1010 Vermont Ave., N. W., Washington 5, D. C.

Sept. 13-16, National Association of Foremen: 27th annual convention, Statler Hotel, Buffalo, N. Y. Association headquarters: 2[illegible] W. First St., Dayton 2, O.

Sept. 18-22, Instrument Society of America: Instrument conference and exhibit, Memorial Auditorium, Buffalo, N. Y. Society headquarters are at 921 Ridge Ave., Pittsburgh 12.

Sept. 19-21, American Society of Mechanical Engineers: Fall meeting, Hotel Sheraton, Worcester, Mass. Society headquarters at 29 W. 39th St., New York 18.

Sept. 23-26, Packaging Machinery Manufacturers Institute: 18th annual meeting. The Homestead, Hot Springs, Va., 342 Madison Ave., New York 17, is address of Institute.

New Products and Equipment

Magnaflux Unit Is Portable

Developed for maintenance, safety and general inspection is a portable Magnaflux unit, available from Magnaflux Corp., 5900 Northwest Highway, Chicago 31, Ill. Such defects as invisible fatigue cracks, shrink and weld cracks are made readily visible by a magnetic particle indication built up on them by quick

magnetization. The alternating current magnetization, best for locating surface defects, also furnishes a demagnetizing field whenever needed.

Unit requires 110 v ac supply line to give alternating or direct current magnetization. Available are 500 magnetizing amperes. Half-wave rectified direct current has been developed for location of subsurface defects and cracks on the inner surface of cylindrical parts. Welded steel frame is supported on ball bearing rubber tired wheels. An accessory compartment contains powder and materials needed and built-in stopage is provided for 30 feet of magnetizing cable. The KH-05 unit may be used with the Magnaglo fluorescent magnetic particle type of inspection.

Check No. 1 on Reply Card for more Details

Multi-Operation Machine Tool

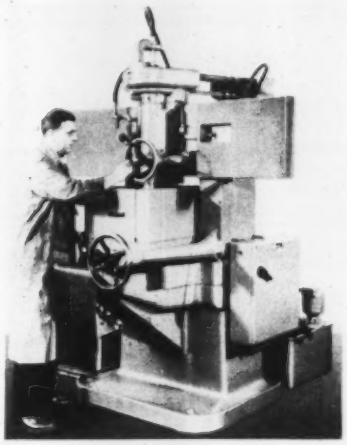
Drilling, boring and tapping of automatic transmission extensions are performed on a Transfer-Matic multioperation machine tool, made by Cross Co., Detroit 7, Mich. The automatic transfer mechanism for this machine finishes 85 pieces per hour at 100 per cent efficiency with two operators.

Machine has 12 stations, including one for loading, ten for cutting and one for unloading. Two-position progressive type, palletized workholding fixtures are used, these carriers being automatically returned from the unloading to the loading station on an integral conveyor. Toolometers control tool life and automatically stop the machine when tools need resharpening. Use of standard Cross subassemblies facilitates maintenance and adds flexibility for part design changes.

Check No. 2 on Reply Card for more Details

Will Surface Carbide Dies

Designed for surfacing high speed steel and carbide dies, reconditioning dulled impression edges and preparing worn dies for resinking are two new die grinders made by Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford 1, Conn. Built in



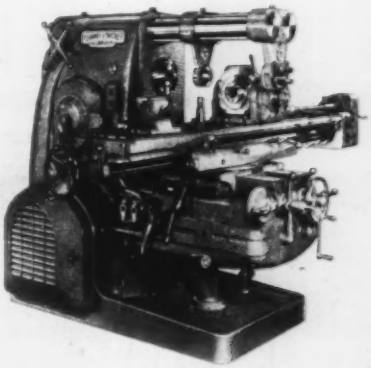
two sizes with table capacities of 16 x 24 and 36 x 42 inches, machines operate as a vertical profiler and readily finish flats around irregular reliefs. Finishes of 1½ to 2 micro inches are produced without need for subsequent lapping or polishing.

Sufficient clearance is provided to permit grinding between guide pins on blanking punch and die halves. Coolant is supplied through the center of the spindle to the inside of the wheel and through an auxiliary line to the outside of the wheel. Machine tables have variable speed ranges from 1 to 20 and 1 to 40 fpm, respectively.

Check No. 3 on Reply Card for more Details

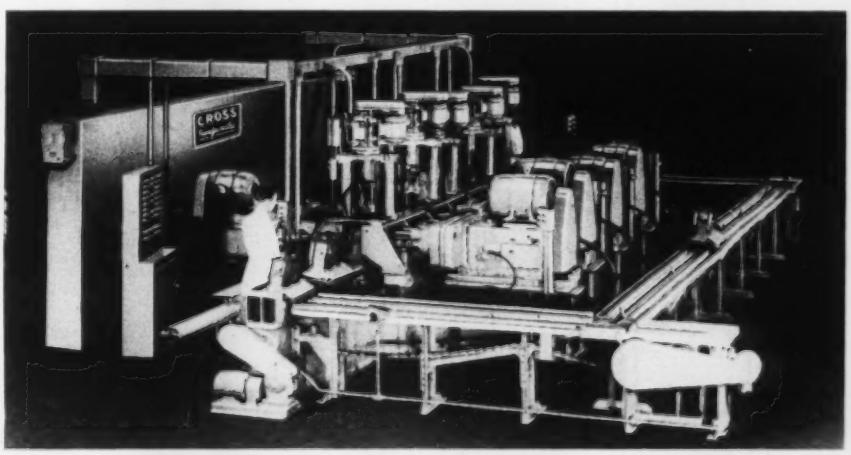
Knee Type Milling Machine

Columns heavier by 1000 to 1200 pounds, depending upon machine size, feature a line of general purpose knee



type milling machines made by Kearney & Trecker Corp., 6784 W. National Ave., Milwaukee 14, Wis., in plain and universal styles. Spindle mounted flywheel runs on three-bearing support. Spindle and speed motors are interlocked with automatic safety control for overload conditions, preventing cutters from stalling in the cut. Machines are built in five sizes.

Largest machines have a double duty spindle nose. A heavy duty driving flange integrally forged with the standard spindle nose permits improved cutting efficiency when large diameter face mills are used. Feed changes from ⅜ to 90 inches per minute are provided along with 24 spindle



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FOLLANSBEE COLD ROLLED STRIP is a custom-made steel suitable for furniture manufacturing and a myriad other uses. Follansbee Cold Rolled Strip in coils is available in tempers and finishes for most industrial cold rolled steel requirements. Follansbee Cold Rolled Strip and Follansbee Polished Blue Strip are furnished in continuous coils to your specifications. You should be taking advantage of the custom-service on Follansbee Specialty Steels—call the Follansbee Representative nearby.

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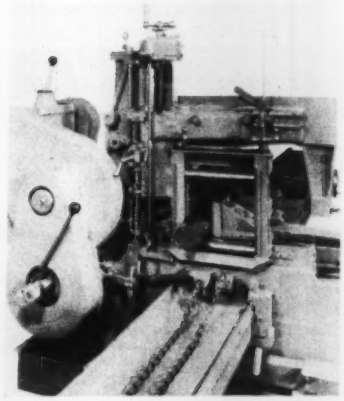
Plants—Follansbee, W. Va.
Follansbee Metal Warehouses—Pittsburgh, Pa., Rochester, N. Y., and Fairfield, Conn.

speed changes. Lubrication is principally automatic through a forced flood system in the column and knee and a metered pressure pump system for table, saddle and knee ways and table feed assembly.

Check No. 4 on Reply Card for more Details

Less Labor in Sawing

Armstrong-Blum Mfg. Co., Chicago, has devised a machine for reducing labor and handling costs in sawing operations. Bar steel, structurals, pipe and other forms measuring up to 10 x 10 inches can be accommodated. Designated as model 9A3, machine



consists of a saw and loading track and discharge track. Steel measuring tapes in both work tracks and built-in wrenches and locking devices eliminate use of additional measuring devices or unattached hand tools. Work is power-fed into the saw by one of two forward speeds. Instantaneous switch from automatic to manual control of feed is possible.

Forward motion can be instantly transferred to any one of three traveling, vise-equipped, work-feeding dollies. While the machine is in full automatic production of cut-off lengths, operator can load a new bar and preset a different cut-off length. Lengths of single or "nested" stock can be cut automatically up to 26 inches. On semiautomatic operation material up to 24 feet ¾-inch can be handled.

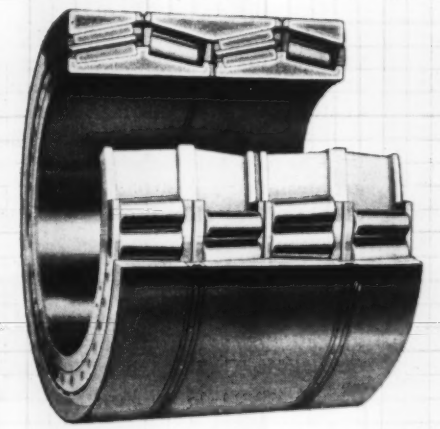
Check No. 5 on Reply Card for more Details

Makes Different Length Nails

Incorporating an adjustable-fulcrum feeder linkage which permits the operator to change length of nail during operation is a line of nail making machines announced by Black Nail Machine Division, Ohio Electric Mfg. Co., 5900 Maurice Ave., Cleveland 4, O. Featuring two-plane wire straightener, automatic cutoff switch which stops when wire runs out or snarls, interchangeable cutoff dies

more tons per turn...

TORRINGTON ROLL NECK BEARINGS



It takes bearings with rugged construction and sound metallurgy to keep roughing stands operating continually. In the rougher and other stands in Carnegie-Illinois Steel Corporation's 80" hot strip mill at Gary Sheet and Tin Mill, Torrington Roll Neck Bearings provide these and other advantages.

Four rows of tapered rollers provide high radial and thrust capacity. The reduced cross-section of these bearings allows larger roll necks for maximum rigidity. Minimum friction allows rapid acceleration with improved quality and uniformity of gage of sheet.

These Torrington Roll Neck Bearing features add up to economical operation, greater production and lower maintenance. Specify Torrington Bearings for your mill stands and auxiliary equipment.

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TORRINGTON *TAPERED ROLLER* BEARINGS

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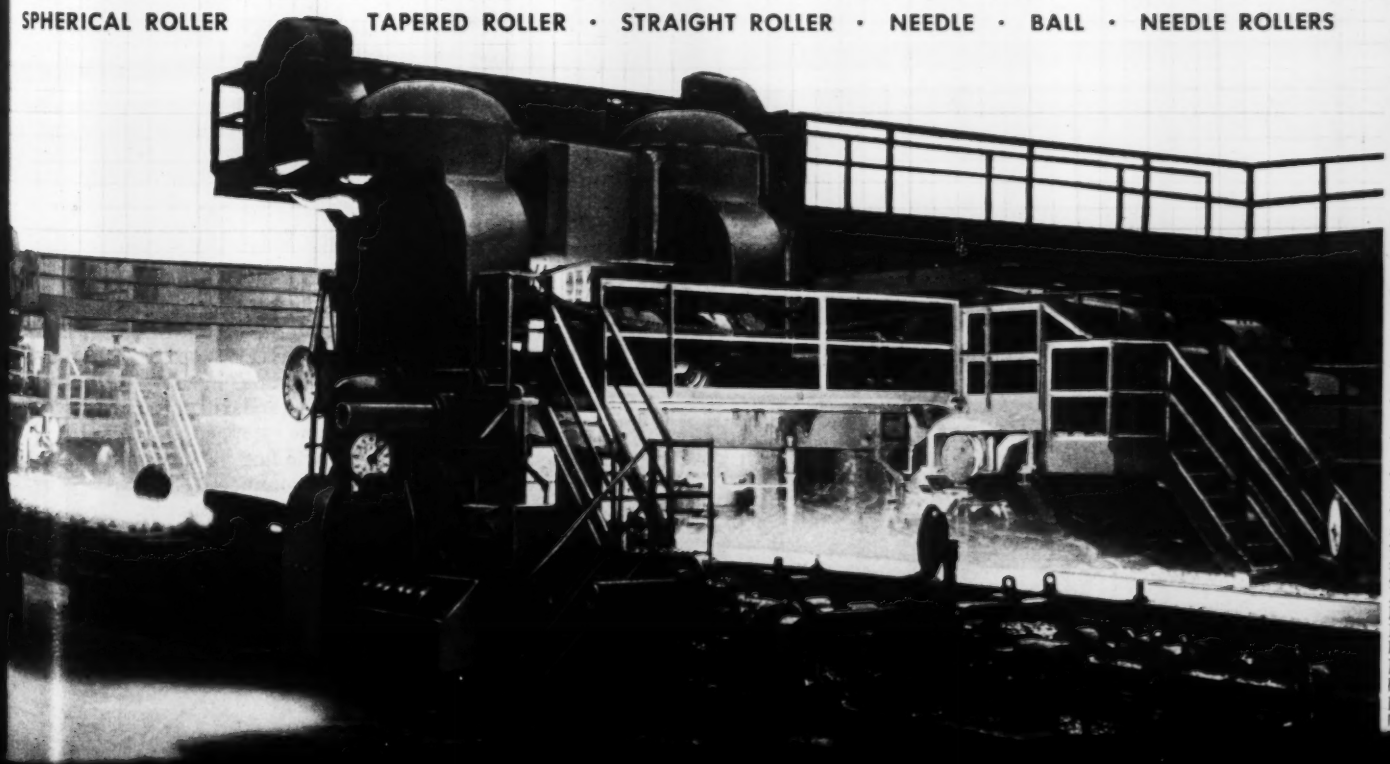

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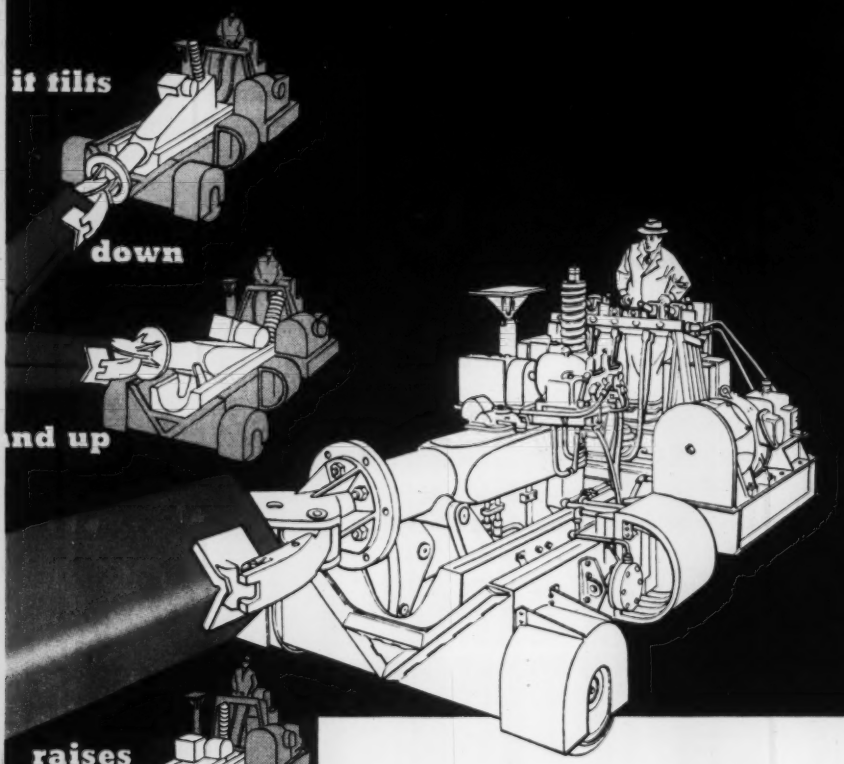
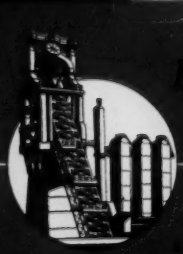
agile*



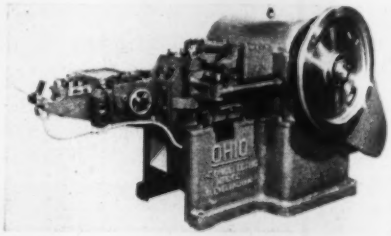
*Amazingly enough, you'll find *agile* an apt description of the massive Brosius Auto Floor Manipulator at work on your forging floor. With swift agility it draws or charges — turns on a dime and moves with independent facility — manipulates the billet or blank with remarkably sensitive movements. And each unit possesses the inherent sturdiness and sensible simplicity so typical of Brosius products. Brosius manipulators will bring to your forge shop added speed, added safety, added economy — you should be using them. Write for literature.



Edgar E. BROSIUS Company Inc.

and adjustable header tool for producing nail heads of different diameters and thicknesses, the machine is offered in a variety of sizes for producing wire brads up to 3/8 x 12-inch spikes.

Enclosed design reduces noise to a minimum and eliminates moving part hazard. All parts in the crank

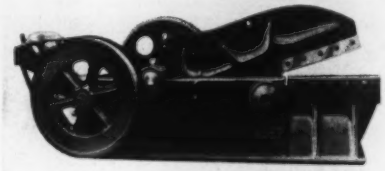


housing are lubricated by pressure or spray. Forged alloy steel crankshaft runs in four interchangeable pressure-lubricated bearings. Bearings have a 6:1 factor of safety and are designed for 30,000 hours of life.

Check No. 6 on Reply Card for more Details

Shear Needs No Foundation

Designated as the Canton 44A, an alligator shear offered by Hill Acme Co., 1201 W. 65th St., Cleveland 2, O., features all steel construction and an adjustable knife seat which requires no shimming even after knives



have been reground. Equipped with bronze bushings, the unit requires no foundation and has a capacity of 4¼-inch rounds or 1 x 30-inch plates in mild steel. Shear is made in high and low knife models in either right or left hand styles.

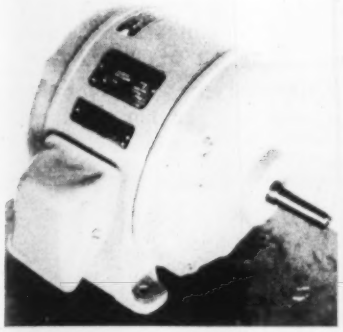
Check No. 7 on Reply Card for more Details

For Quick Stopping Uses

Developed for applications requiring quick stopping is an induction motor brake, made by Standard Dayton Corp., P. O. Box 1001, Dayton 1, O. In operation, motor is started as any other standard motor, but when it is to be stopped, circuit to the running winding is disconnected and a circuit completed between power source and brake winding. Under influence of the braking winding, a retarding force several times that of full load torque is applied to the rotor.

As motor approaches a complete

stop, braking force becomes negligible, permitting shifting of gears, turning by hand, etc. There is no reverse torque tending to rotate the



load in the reverse direction. Brake is generally interchangeable with standard NEMA motors of the same rating. It is available in sizes from 1/20 to 10 hp, single and polyphase.

Check No. 8 on Reply Card for more Details

Vise Has Four Adjustments

Fitting any surface or tool grinder, a universal tool vise, made by Delta Power Tool Division, Rockwell Mfg. Co., Milwaukee 1, Wis., provides four separate planes of adjustment for grinding, drilling and milling. Because the keys in the base may be

detached, the Univise can be used on a drill press or other machine without table slots, or on a magnetic chuck. Jaws will take up to 1½-inch tools.

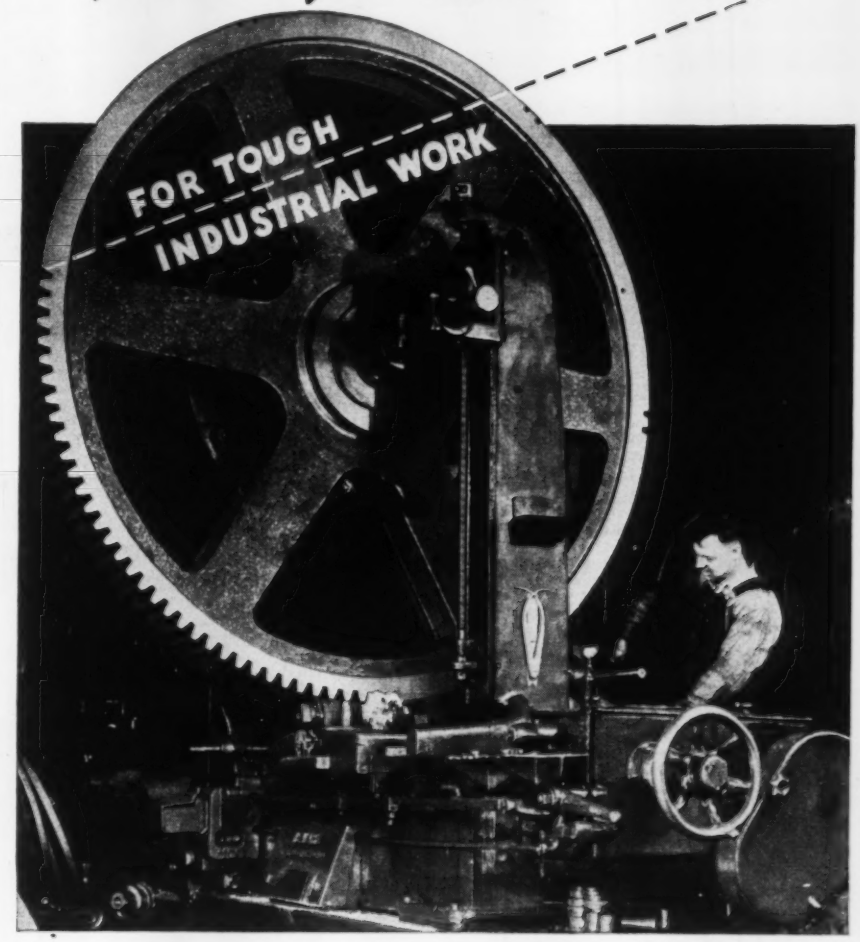
Each of the four separate parts may be rotated, permitting a tool to be held in any conceivable angle. On duplicate grinding, the vise may be returned exactly to its original setting.

Check No. 9 on Reply Card for more Details

Lathe Series Improved

Features which add to precision of operation and minimize maintenance have been incorporated in the series 60 line of engine and toolmaker's lathes developed by Monarch Machine

SPUR GEARS
by Horsburgh & Scott



• This large gear, in the making, will soon be doing hard work in a steel mill . . . just one of many gears made by Horsburgh & Scott in sizes up to 12 feet in diameter and 20,000 pounds weight. There's a Horsburgh & Scott gear for every job . . . accurate . . . rugged . . . built to endure . . . a trial will prove their quality.

Send note on Company Letterhead for 488-Page Catalog 41

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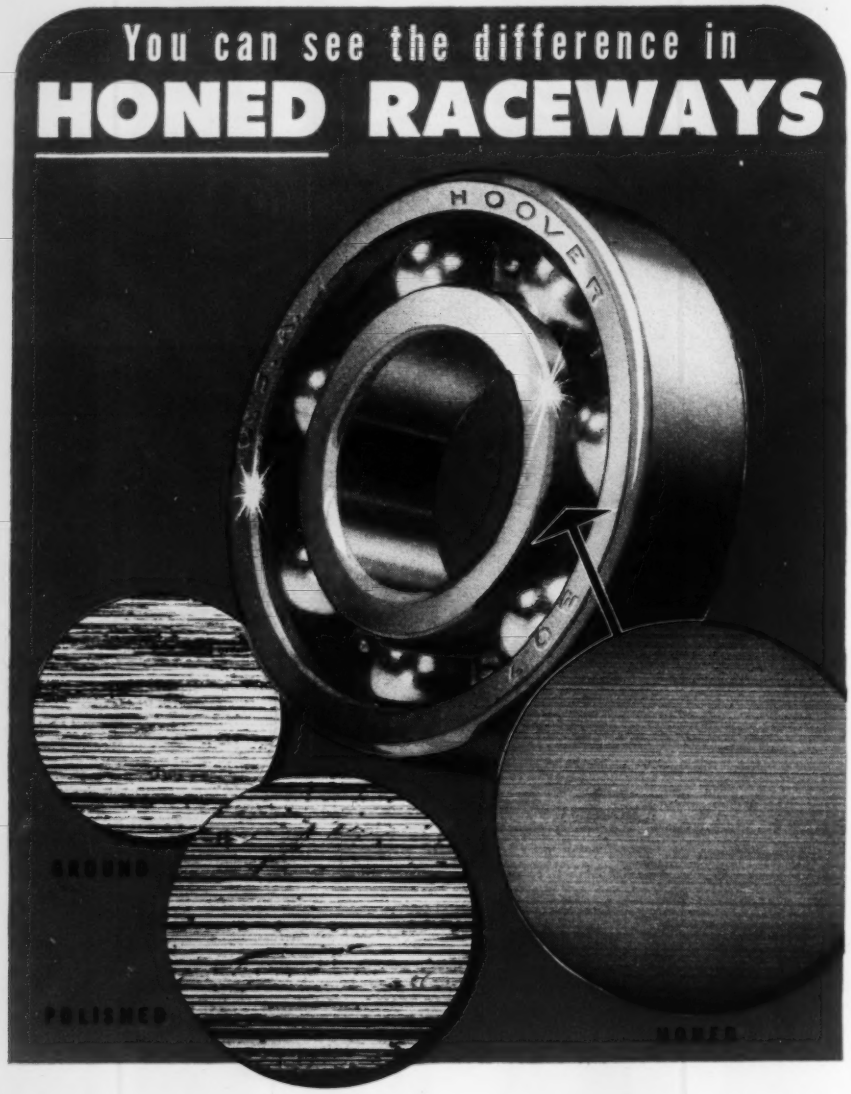
HONED RACEWAYS



exclusive with
HOOVER BALL BEARINGS

The photographs reproduced above are magnified one hundred times so you can see the difference between ground, polished and honed raceways. The process and the special machines for the honing operation are exclusive, patented, Hoover developments. Honing by Hoover goes far beyond grinding and polishing to achieve a surface that assures amazing quietness plus *90 per cent longer bearing life . . . 30 per cent greater load capacity.* That's why Hoover Ball Bearings are the choice of distinguished American manufacturers of fine machines and equipment.

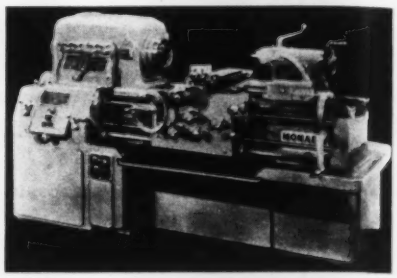
The Hoover Engineering Manual will be mailed free to engineering and purchasing executives requesting a copy on their business letterhead.

THE ARISTOCRAT OF BEARINGS

HOOVER BALL and BEARING CO.
Ann Arbor, Michigan

Tool Co., Sidney, O. Both gear box and end gearing are totally enclosed. Extra wide gear teeth on the headstock helical gears make possible more efficient transmission of power. Speed changes are accomplished by heavy sliding jaw clutches. Machines are made in 14, 16 and 20-inch sizes.

Automatic pressure lubrication is provided to gear box, end gearing,

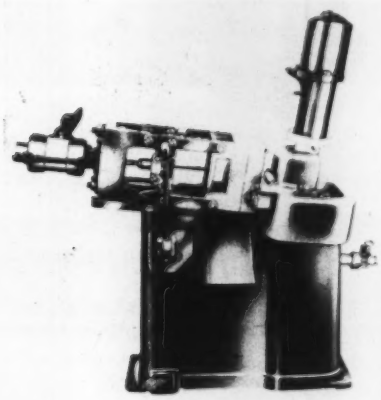


headstock, apron, carriage bearing on the ways and compound bottom slide on the carriage. Tailstock of toolmaker's lathes is of the quick-clamping type. An air gage tracer is supplied with the 16 and 20-inch machines. Electrically operated Motor-Trace and Monarch-Keller controls, operated by magnetic clutches, are available on all units.

Check No. 10 on Reply Card for more Details

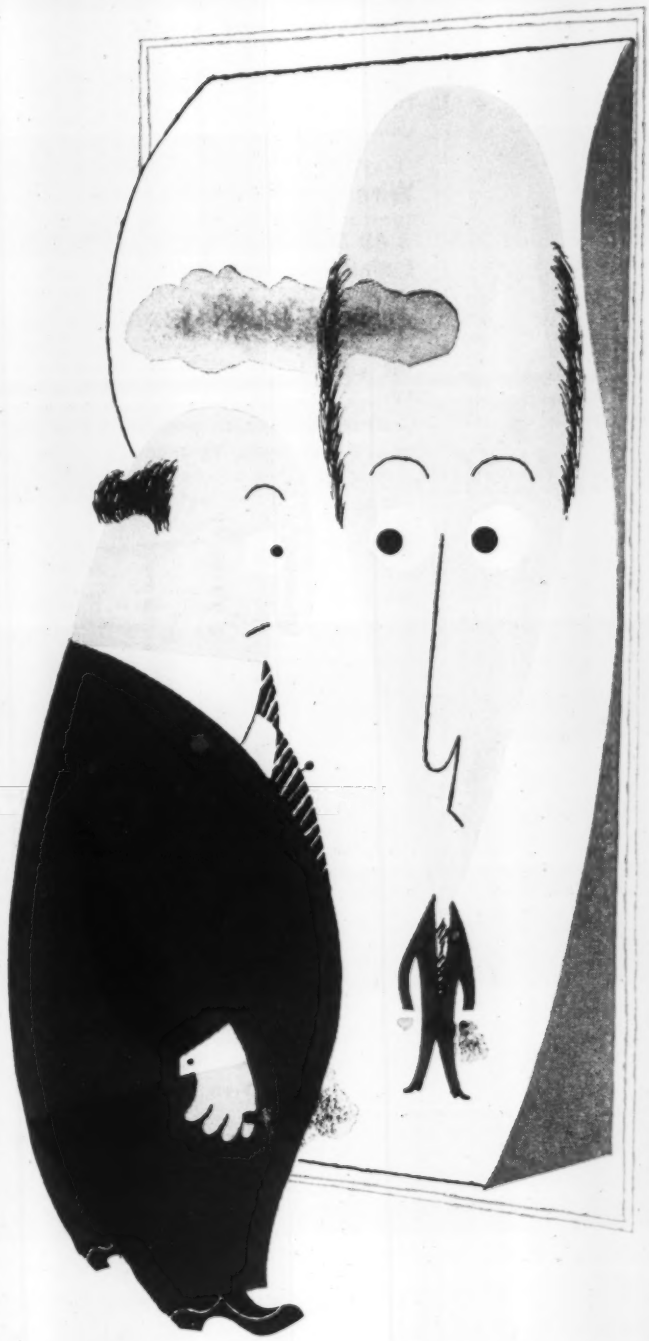
Automatic Die Casting Machine

Automatic injection of molten metal and automatic opening and closing are functions of an air-operated die casting machine made by DCMT Die Casting Machine Corp., 164 Duane St., New York 13, N. Y. The model



A16A machine incorporates fast chill and high cycling speed principles. Jobs up to 1 pound in capacity may be handled.

Machine utilizes die blocks up to 2½-inches thick and as large as 9 x 9 inches. Production speeds average 600 to 800 shots per hour. Die blocks supplied with the machine are



don't get the wrong impression

It's easy to get the distorted idea that stainless steel is a "miracle metal," but after all, stainless is a *family of alloys*, and careful consideration must be given to the *right* analysis to use . . . or stainless won't live up to advance notices. Crucible, pioneers in the development of these specialty steels, makes freely available to you an alert metallurgical staff to help you put Crucible Stainless to work most efficiently in your application.

Crucible's half century of specialty steel leadership is based on a keen devotion to detail in every industry-posed problem. That's why Crucible built, from the ground up, one of the first integrated mills designed specifically for the hot and cold rolling of stainless steels. Take full advantage of Crucible's specialty steel experience. Call us in to work for you. CRUCIBLE STEEL COMPANY OF AMERICA, Chrysler Building, New York 17, N. Y.

CRUCIBLE first name in special purpose steels

STAINLESS STEELS

fifty years of Fine steelmaking

STAINLESS • HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

UNIVERSITY OF MICHIGAN LIBRARIES

Trying out automobile quarter panel die at Superior Tool & Die Co. 21535 Hoover Rd., Detroit 13, Mich.

HERE'S WHERE A PRESS HAS TO BE PERFECT -- SO IT'S A CLEARING

No more exacting conditions can be imagined than those under which this 1300-ton double action Clearing press has to perform day after day. It is owned by the Superior Tool and Die Company of Detroit, and it is used for test runs of new dies before they are accepted by customers. Every stamping is therefore examined far more critically than would be the case in commerical production. The slightest lack of precision in the press would make it impossible to check the dies properly.

Superior Tool and Die Company chose a Clearing press for this work because they could not afford to compromise with quality. Their customers expect dies to perform without excuses, and the evidence of acceptable stampings is the only evidence that counts. The Clearing press produces that evidence from Superior's carefully made dies.

If you want press equipment that saves time, speeds production, and assures quality output, you can profit from the example of men who "know their stuff" in metalworking.

CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION

CLEARING MACHINE CORPORATION

6499 WEST 65TH STREET • CHICAGO 38, ILLINOIS

CMC CLEARING

completely prefabricated and contain everything except the actual cavities. A heavy four-corner toggle lock absorbs shot pressure and insures relatively flash free castings.

Check No. 11 on Reply Card for more Details

Wire Coils Stacked in Trucks

All Steel Welded Truck Co., Rockford, Ill., is manufacturing a stacking type truck for use in handling and storing coiled wire. When used with the Clark lift jack system, truck has the advantage of additional flexibility.

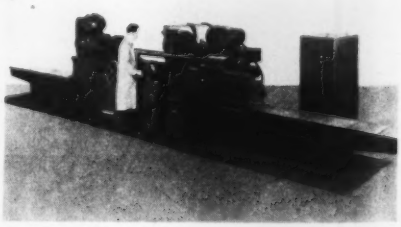
Truck makes it possible to stack heavy wire coils, by means of a fork

truck, three or four tiers high, thereby saving floor space. Truck illustrated is one of many versions; manufacture is in all sizes to accommodate and fit particular requirements.

Check No. 12 on Reply Card for more Details

16-Inch Swing for Grinding

Parts requiring additional swing for a large diameter of short length may be ground on a center type grinding machine with nominal 16 inch swing, 40 inches over the gap,



built by Cincinnati Grinders Inc., Marburg Ave., Cincinnati 9, O. Built in lengths of 96, 120, 144 and 168 inches, machines have the same design features as the Filmatic 14 and 16-inch plain grinding machines. Grinding wheel spindle runs on Filmatic bearings, a segmental construction which develops high pressure

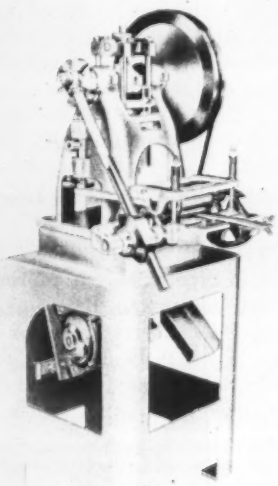
wedge-shaped oil films between the segments and spindle diameter.

Table is traversed by rack and pinion and a simple drive from the motor. Traverse rates are variable from 3 to 120 inches per minute. Electrical system provides automatic acceleration and deceleration of the table at reversal eliminating shock. Headstock is a dead spindle direct current motor driven unit, with a No. 15 B & S taper hole. Spindle speeds are rheostat-controlled from 20 to 72 rpm.

Check No. 13 on Reply Card for more Details

High Speed Automatic Press

A feed of more rigid construction, easier to set, with spring tension evenly distributed for more accuracy and longer life, features a 5-ton press, made by Di Machine Corp., 2711 W. Irving Park Rd., Chicago 18, Ill. The



base of the automatic machine encloses the motor, belt and pulley. A heavier gear rack and simpler adjustment plate makes for less adjustment. A positive knockout for compound dies is more versatile and easier to set.

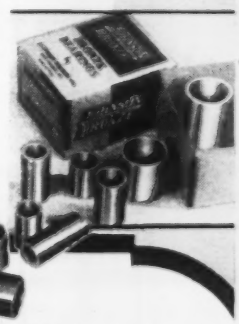
Check No. 14 on Reply Card for more Details

Muller for Experimental Use

Weighing only 85 pounds and handling mixes up to 7 pounds is the 12-inch diameter Cincinnati Muller, offered by Buckeye Products Co., 7020 Vine St., Cincinnati 16, O. Made with only two moving assemblies, the machine is easily cleaned and reassembled. Use may be for laboratory testing of core sand mixes, facing sand mixes and molding sand mixes.

Door at bottom of unit discharges sand. Operation is by a 1½ hp, 110 v 60 cycle alternating or direct current ball bearing motor. Muller is cleaned by lifting off the outer shell,

OVER 90% of your sleeve bearing needs are listed in this Johnson Bronze catalog . . . and are stocked by your local Johnson Bronze Distributor. Keep your copy near. Refer to it when you need bearings and bushings. There are over 850 sizes of GP (General Purpose) Bearings listed by inside diameter, outside diameter, and length . . . you can order by catalog number. The same applies to over 200 sizes of Graphited Bearings, more than 300 different Electric Motor Bearings, over 350 sizes of Universal Bronze Bars, and two types of Babbitt Metal. In an emergency, look up the item you need and phone your Johnson Bronze Distributor. He has it in stock and can make immediate delivery.



If you do not have the latest Johnson Bronze Catalog, write today for your copy.

Johnson Bronze
SLEEVE BEARING HEADQUARTERS
550 SOUTH MILL STREET • NEW CASTLE, PA.

then lifting out muller and scraper assemblies. Parts may be cleaned by air-pressure gun or brush.

Check No. 15 on Reply Card for more Details

• • •

ETCHES ALUMINUM: Pennsalt AE-18, a highly concentrated alkaline compound for etching aluminum without forming hard sludge deposits on the bottom of the etching tanks is announced by Pennsylvania Salt Mfg. Co., Philadelphia 7, Pa.

Check No. 16 on Reply Card for more Details

CUTS STRAPS: A. J. Gerrard & Co., Melrose Park, Ill., offers a new steel strapping cutter with a tapered lower jaw that can be inserted under the tightest strap. Offset handle affords easy grip with tool lying flat against surface. Cutters are available for 2-inch strapping and for ¾ to 1¼-inch strapping.

Check No. 17 on Reply Card for more Details

STAMPS METAL: Model PSF-20, a new heavy duty stamping unit for marking heavy metal specification plates is available from M. E. Cunningham Co., Pittsburgh 19, Pa. The chase holder is designed to accommodate logotypes of one or several lines of lettering, so either a partial or complete stamping may be done in a single operation.

Check No. 18 on Reply Card for more Details

PROTECTS AGAINST FLAMES: Spa-Fla, a new cloth safety shield, introduced by Safety First Supply Co., Pittsburgh, Pa., protects property and personnel in the work area from sparks, hot chips and flying particles and guards against eye burns from flash. It will stand by itself, formed in any position, around the job being performed.

Check No. 19 on Reply Card for more Details

PNEUMATIC CONTROLS: Victor Equipment Co., San Francisco, Calif., announces a line of pneumatic control equipment for use with air operated tools and machinery to filter, regulate and lubricate the air to obtain maximum efficiency and minimum operating costs. Unit is available in ¼ or ⅜-inch pipe.

Check No. 20 on Reply Card for more Details

DRILLS SMALL HOLES: The micro drilling machine, made by Walcon Engineering Co. and available from Dudley Cohen, New York 23, N. Y., will drill holes as small as 0.0016-inch diameter with a minimum of drill point breakage. The only moving part is the spindle which runs in bronze oilless bearings of the V-type and is held in place and in perfect alignment without need of adjustments by endless rubber drive belt.

Check No. 21 on Reply Card for more Details

TESTS SANDS: Preparation of sand specimens for compression testing and testing of compression strength of specimens is combined in the new instrument introduced by Claud S. Gordon Co., Chicago 16, Ill. Pressure is gradually applied by hand until specimen collapses. Maximum pressure in pounds per square inch is indicated by a gage.

Check No. 22 on Reply Card for more Details

LIGHTWEIGHT DRILL: Weighing only 8¾ pounds, the new type 400, ½-inch capacity SpeedDrill, made by SpeedWay Mfg. Co., Cicero, Ill., delivers ½-hp at the drill point under normal load. A cast-in air cooling system with oversize die cast fan, cast-in baffles and channels cools the motor and clears away chips from the working surface.

Check No. 23 on Reply Card for more Details

SELF-PRIMING PUMPS: All valves are eliminated in the new line of centrifugal pumps offered by Goulds Pumps Inc., Seneca Falls, N. Y. The units are positive self-priming, and do not require a priming reservoir, or recirculation of water during pumping stage. They are made in sizes from ¼ to 5 hp, open and closed impellers.

Check No. 24 on Reply Card for more Details

LEVEL STAYS PUT: Buckeye Plastic Corp., Cleveland 15, O., introduces the Magno-Level for use on metals. Its permanent Alnico magnets, built with a sturdy aluminum frame, hold the level at any angle on either flat or curved surfaces. A clock-faced angle gage with balanced gravity needle indicator immediately determines any angle from 0 to 360 degrees.

Check No. 25 on Reply Card for more Details

FINE PITCH HOBS: Availability of a complete assortment of fine pitch hobs is announced by Illinois Tool Works, Chicago. A Toolgraph chart, prepared by special inspection equipment developed by the company, is included with each fine pitch hob. It is an easily read individual graph of the actual variation the lead of each hob.

Check No. 26 on Reply Card for more Details

INSTRUMENT OILS: Recommended for use in virtually all fine precision instruments, two new synthetically tailored lubricants are offered by Gulf Oil Corp., Pittsburgh, Pa. Both the special instrument oil and micro bearing oil have a nonspreading quality that enables them to stay put over long periods of time when applied in minute quantities to small pivot-to-jewel or pivot-to-brass bearings.

Check No. 27 on Reply Card for more Details

HARD FACING ELECTRODE: For applications where the highest obtainable hardness is desired, Eutectic Welding Alloys Corp., New York 13, N. Y., has designed Eutec-Trode 10. It deposits a bead having a hardness of Rockwell C 63-68. It has high resistance to abrasion. The electrode is available in ⅛, 5/32, and 3/16-inch diameter rods.

Check No. 28 on Reply Card for more Details

FIRE EXTINGUISHERS: A new line of Alfco 2½-gallon fire extinguishers are offered by American-LaFrance-Foamite Corp., Elmira, N. Y. Models include a chemical Foamite unit for class A and B fires; a chemical solution (soda-acid) for class A fires and a plain water type, discharged by carbon dioxide gas. Units also feature a new panel of operating instructions.

Check No. 29 on Reply Card for more Details

FRACTIONAL HP MOTOR: Model 700, brush type, universal motor of ⅛ to ¼-hp, continuous duty rating, is available from Electric Motor Corp., Racine, Wis. It is designed for use where high starting torque and large output power at high speed is required.

Check No. 30 on Reply Card for more Details

STRAPPING CUTTER: An improved strap cutting tool, announced by Signode Steel Strapping Co., Chicago 47, Ill., has a moving blade that can be reversed to provide a new cutting edge. The stationary blade is easily removed for sharpening.

Check No. 31 on Reply Card for more Details

VERTICAL AIR CYLINDER: A vertical air cylinder with a threaded nose with jam-nut lock for underneath jig installations is announced by Air-Mite, Chicago 12, Ill. It delivers 75 pounds thrust on a 100 pound line pressure.

Check No. 32 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

TERRIFIC jam in inquiry prevails in the steel markets. Apprehensive of steadily worsening supply under impact of national emergency requirements, consumers are pressing the mills for tonnage. But their frantic procurement efforts are meeting with little success. Inquiries are being rejected or tabled wholesale by producers in face of uncertainties as regards military needs and distribution controls. Until emergency demands are better known, and a system of allocations is worked out and approved by Washington, it looks as though the makers will book new orders cautiously.

SUPPLY— National emergency requirements over remainder of the year will take only a small percentage of total steel output. Some military business is being booked but it is relatively small. Flood of military and related orders is not expected until late in year at earliest. On the face of this, it would appear steel supply will be adequate for all normal civilian needs in the months immediately ahead. Excessive stockpiling by consumers is out of the question, and facing possible revision of schedules to meet war demands later on, the steel mills are screening all orders carefully and holding customers to established quotas.

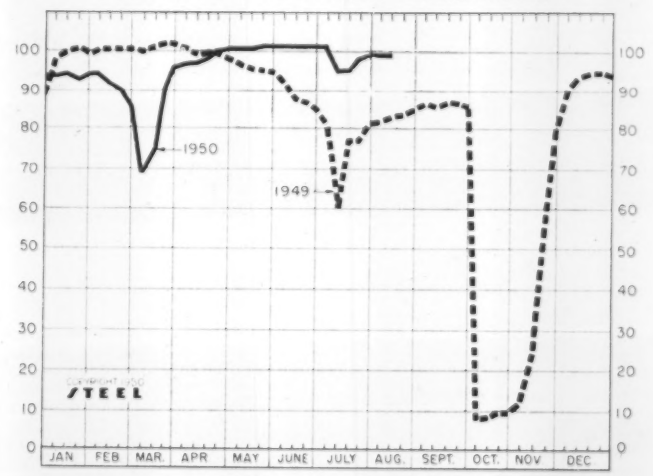
DEMAND— Unusually heavy demand in general promises to continue indefinitely into the future, not only for inventory but to meet current needs of manufacturing industry. Because of delayed deliveries some hardship cases already are noted though no extensive shutdowns on this account have occurred. The mills are booked to the hilt on virtually all products and are certain to carry over large tonnage into fourth quarter. As a result, a substantial portion of fourth quarter production will go to care for the third quarter overflow.

PRODUCTION— Capacity steel mill operations indefinitely into the future are assured. The mills are pouring steel in record-breaking volume with ingot production capacity largest in history, in excess of 100 million tons annually. Additional capacity is being installed and by end of 1952 the industry is expected to be in position to produce in excess of 105 million tons a year. Steel ingot output last week was second largest in history, totaling about 1,926,000 net tons compared with the all-time high of 1,940,600 in the week ended May 27 this year. Annual industry capacity as of July 1 was 100,563,500 net tons of ingots, increase of 1,170,700 since Jan. 1. On the basis of the revised capacity data STEEL's estimate of the national ingot rate held unchanged last week at 99.5 per cent.

PRICES— Strong undertone prevails in the markets but prices, for the most part are unchanged. Isolated advances continue to be made. Last week several producers raised rail steel bar prices $11 per ton, and a maker of merchant bars effected an increase of $3. At Pittsburgh a producer of hot strip advanced its price $5 per ton. An eastern producer was reported quoting carbon billets, rerolling, $4 higher, forging billets up $3 and alloy billets $2. This latter interest also raised pig iron $2 per ton. At the same time nonferrous metals display strength, last wek tin rising to $1.035 per pound, higher than the government's pegged price withdrawn last fall. Brass ingot advanced during the week as did secondary aluminum.

COMPOSITES— Reflecting the advance in hot-rolled strip by one maker at Pittsburgh, STEEL's weighted index on finished steel rose to 156.99 from 156.69. The arithmetical composite on finished steel, however, held unchanged at $94.36, advances effected during the week remaining within the price range generally quoted throughout the industry. Strength in the scrap market lifted the price composite on steelmaking grades to $38.58 from $37.33 and compared with $20 a year ago.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

	Week Ended Aug. 12	Change	Same Week 1949	Same Week 1948
Pittsburgh	101	+ 1*	78	93.5
Chicago	102	+ 1*	88.5	91
Eastern Pa.	98	0	73.5	91
Youngstown	106	— 2	88	103
Wheeling	97	— 3	92	95.5
Cleveland	98	— 2	98.5	88.5
Buffalo	104	0	96	101.5
Birmingham	100	0	100	100
New England	98	0	58	85
Cincinnati	103	+ 3	91	99
St. Louis	89	+ 2.5	73	78
Detroit	104	+ 1*	100	102
Western	98	— 5	77	..
Estimated national rate	99.5†	0*	82.5	94.5

Based on weekly steelmaking capacity of 1,906,267 net tons for first half and 1,926,863 second half, 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948.

*Change from revised rate. †Based on increased capacity.

Composite Market Averages

	Aug. 10 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100)	156.99	156.69	156.69	152.52	101.85
Index in cents per lb.	4.253	4.245	4.245	4.132	2.759
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$94.36	$94.36	$94.36	$91.55	$58.27
No. 2 Fdry. Pig Iron, GT	46.85	46.85	46.47	46.10	24.67
Basic Pig Iron, GT	45.97	45.97	45.97	45.60	24.00
Malleable Pig Iron, GT	47.49	47.49	47.27	47.27	25.29
Steelmaking Scrap, GT	38.58	37.33	36.75	20.00	19.17

Weighted finished steel index based on average shipments and prices of the following 14 representative products during 5-year base period 1935-39. Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Aug. 10 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.45	3.45	3.45	3.35	2.25
Bars H.R., Chicago	3.45	3.45	3.45	3.35	2.25
Bars, C.F., Pittsburgh	4.10–15	4.10–15	4.10–15	3.95–4.00	2.75
Shapes, Std., Pittsburgh	3.40	3.40	3.40	3.25	2.10
Shapes, Std., Chicago	3.40	3.40	3.40	3.25	2.10
Plates, Pittsburgh	3.50	3.50	3.50	3.40	2.25
Plates, Chicago	3.50	3.50	3.50	3.40	2.25
Plates, Coatesville, Pa.	3.60	3.60	3.60	3.50	2.25
Plates, Sparrows Point, Md.	3.50	3.50	3.50	3.40	2.25
Plates, Claymont, Del.	3.60	3.60	3.60	3.50	2.25
Sheets, H.R., Pittsburgh	3.35	3.35	3.35	3.25	2.20
Sheets, H.R., Chicago	3.35	3.35	3.35	3.25	2.20
Sheets, C.R., Pittsburgh	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Chicago	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh	4.40	4.40	4.40	4.40	3.70
Strip, H.R., Pittsburgh	3.50	3.25–50	3.25–50	3.25	2.10
Strip H.R., Chicago	3.25	3.25	3.25	3.25	2.10
Strip, C.R., Pittsburgh	4.15–50	4.15–50	4.15–50	4.15–55	2.80
Strip, C.R., Chicago	4.30	4.30	4.30	4.00–15	2.90
Strip, C.R., Detroit	4.35–95	4.35–95	4.35–95	4.20–25	2.90
Wire, Basic, Pittsburgh	4.50	4.50	4.50	4.15	2.75
Nails, Wire, Pittsburgh	5.30	5.30	5.30	5.15	2.90
Tin plate, box, Pittsburgh	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

Billets, forging, Pitts. (NT)	$63.00	$63.00	$63.00	$61.00	$42.00
Sheet bar, mill (NT)	58.00	58.00	58.00	52.50	36.00
Wire rods, 7/32-⅝", Pitts.	3.85	3.85	3.85	3.40	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$47-$50	$47-$50	$47.00	$47.00	$25.50
Basic, Valley	46.00	46.00	46.00	46.00	24.50
Basic, del. Phila.	50.39	49.44	49.44	49.39	26.34
No. 2 Fdry, Pitts.	49.50	49.50	46.50	46.50	25.00
No. 2 Fdry, Chicago	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, Valley	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, del. Phila.	50.89	49.94	49.94	49.89	26.84
No. 2 Fdry, Birm.	42.38	42.38	42.38	39.38	21.38
No. 2 Fdry (Birm.)del.Cin.	49.08	49.08	49.08	45.43	25.06
Malleable, Valley	46.50	46.50	46.50	46.50	25.00
Malleable, Chicago	46.50	46.50	46.50	46.50	25.00
Charcoal, Lyles, Tenn.	60.00	60.00	60.00	66.00	33.00
Ferromanganese, Etna, Pa.	175.00	175.00	175.00	175.00	140.33*

*Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts.	$41.00	$41.00	$40.00	$21.00	$20.00
No. 1 Heavy Melt. E. Pa.	36.75	33.00	33.00	17.50	18.75
No. 1 Heavy Melt. Chicago	38.00	38.00	37.25	21.50	18.75
No. 1 Heavy Melt. Valley	43.25	42.25	40.75	19.50	20.00
No. 1 Heavy Melt. Cleve.	40.75	40.25	38.50	15.75	19.50
No. 1 Heavy Melt. Buffalo	36.75	36.75	36.75	24.25	19.25
Rails, Rerolling, Chicago	55.125	50.50	48.50	34.50	22.25
No. 1 Cast, Chicago	49.00	44.50	44.50	34.00	20.00

Coke, Net Ton

Beehive, Furn., Connlsvl.	$14.25	$14.25	$14.25	$13.25	$7.50
Beehive, Fdry., Connlsvl.	15.50	15.50	15.50	15.75	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.35

NONFERROUS METALS

Copper, del. Conn.	22.50	22.50	22.50	17.625	12.00
Zinc, E. St. Louis	15.00	15.00	15.00	10.00	8.25
Lead, St. Louis	11.80	11.80	11.80	14.80–.975	6.35
Tin, New York	103.50	97.75	90.00	103.00	52.00
Aluminum, del.	17.50	17.50	17.50	17.00	15.00
Antimony, Laredo, Tex.	24.50	24.50	24.50	38.50	14.50
Nickel, refinery, duty paid	48.00	48.00	48.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	48.00	$48.50	$49.00	$49.50
Brooklyn, N.Y., del.	....	52.79	53.29	....
Newark, del	50.63	51.13	51.63	52.13
Philadelphia, del.	50.39	50.89	51.39	51.89
Birmingham District				
Alabama City, Ala. R2	41.88	42.38	....	....
Birmingham R2	41.88	42.38	....	....
Birmingham S9	41.88	42.38	....	....
Woodward, Ala. W15	41.88	42.38	....	....
Cincinnati, del.	....	49.08	....	....
Buffalo District				
Buffalo H1, R2	46.00	46.50	47.00	....
Tonawanda, N.Y., W12	46.00	46.50	47.00	....
N. Tonawanda, N.Y., T9	....	46.50	47.00	....
Boston, del.	55.26	55.76	56.20	....
Rochester, N.Y., del.	48.63	49.13	49.63	....
Syracuse, N.Y., del.	49.58	50.08	50.58	....
Chicago District				
Chicago I-3	46.00	46.50	46.50	47.00
Gary, Ind. C3	46.00	....	46.50	....
Indiana Harbor, Ind. I-2	46.00	....	46.50	....
So. Chicago, Ill. W-14, Y1	46.00	46.50	46.50	....
So. Chicago, Ill. C3	46.00	....	46.50	47.00
Milwaukee, del.	47.89	48.39	48.39	48.89
Muskegon, Mich., del.	....	51.98	51.98	....
Cleveland District				
Cleveland A7	46.00	46.50	46.50	47.00
Cleveland R2	46.00	46.50	46.50	....
Akron, del. from Cleve.	48.39	48.89	48.89	49.39
Lorain, O. N3	46.00	....	....	47.00
Duluth I-3	....	....	46.50	....
Erie, Pa. I-3	46.00	46.50	46.50	47.00
Everett, Mass. E1	....	50.50	51.00	....
Fontana, Calif. K1	52.00	52.50	....	....
Geneva, Utah G1	46.00	46.50	....	....
Seattle, Tacoma, Wash., del.	....	54.20	....	....
Portland, Oreg., del.	....	54.20	....	....
Los Angeles, San Francisco, del.	53.70	54.20	....	....
Granite City, Ill. M10	47.90	48.40	48.90	....
St. Louis, del. (incl. tax)	48.65	49.15	49.65	....
Ironton, Utah C11	46.00	46.50	....	....
Lone Star, Tex. L6	41.50	*42.00	42.00	....
Minnequa, Colo. C10	47.00	47.50	47.50	....
Pittsburgh District				
Neville Island, Pa. P6	....	49.50	49.50	50.00
Pitts, N.&S. sides, Ambridge, Aliquippa, del.	....	50.69	50.69	51.19
McKees Rocks, del.	....	50.45	50.45	50.95
Lawrenceville, Homestead, McKeesport, Monaca, del.	....	50.94	50.94	51.44
Verona, del.	....	51.40	51.40	51.90
Brackenridge, del.	....	51.63	51.63	52.13
Bessemer, Pa. C3	46.00	....	46.50	47.00
Clairton, Rankin, So. Duquesne, Pa. C3	46.00	....	....	....
McKeesport, Pa. N3	46.00	....	....	47.00
Sharpsville, Pa. S6	....	....	46.50	47.00
Steelton, Pa. B2	48.00	48.50	49.00	49.50
Steubenville, O. W10	46.00	....	....	....
Swedeland, Pa. A3	50.00	50.50	51.00	51.50
Toledo, O. I-3	46.00	46.50	46.50	47.00
Cincinnati, del.	51.01	51.51	....	....
Troy, N. Y., R2	48.00	48.50	49.00	49.50
Youngstown District				
Hubbard, O. Y1	46.00	46.50	46.50	....
Youngstown C3	46.00	....	....	47.00
Youngstown Y1	46.00	46.50	46.50	47.00
Mansfield, O., del.	50.26	50.76	50.76	51.26

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%.
Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.
Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.
Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si to 11.50%)

Jackson, O. G2, J1	$57.00
Buffalo H1	58.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for 0.045% max. P)

Niagara Falls, N.Y. P15	$71.50
Keokuk, Iowa, Openhearth & Fdry. frt. allowed K2	77.00
Keokuk, Iowa, OH & Fdry., 12½ lb. piglets, frt. allowed K2	82.00
Wenatchee, Wash., OH & Fdry., frt. allowed K2	77.00

CHARCOAL PIG IRON, Gross Ton

(Low phos, semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$60.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$51.00
Steelton, Pa. B2	54.00
Philadelphia delivered	57.00
Troy, N.Y. R2	54.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL Aug. 10, 1950; cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicat e producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Detroit R(..... $50.00
Fontana,Calif. K1 ....76.00
Munhall,Pa. C3 .....50.00

INGOTS, Alloy (NT)
Detroit R(..... $51.00
Fontana,Calif K1 .....77.00
Houston,Tex. S5 .....59.00
Midland, Pa. C18 ....51.00
Munhall,Pa. C3 .....51.00
So.Duquesne,Pa. C3 ..51.00

BILLETS, BLOOMS & Slabs
Carbon, Rerolling (NT)
Bessemer,Pa. C3 .... $53.00
Clairton,Pa. C3 .....53.00
Conshohocken,Pa. A3 ..62.00
Ensley,Ala. T2 .....53.00
Fairfield,Ala. T2 .....53.00
Fontana,Cal. K1 .....72.00
Gary,Ind. C3 .....53.00
Johnstown,Pa. B2 ....53.00
Lackawanna,N.Y. B2..53.00
Munhall,Pa. C3 .....53.00
So.Chicago,Ill. C3 ....53.00
So.Duquesne,Pa. C3 ...53.00

Carbon, Forging (NT)
Bessemer,Pa. C3 ....$63.00
Buffalo R2 .....63.00
Canton,O. R2 .....63.00
Clairton,Pa. C3 .....63.00
Cleveland R2 .....63.00
Conshohocken,Pa. A3 ..68.00
Detroit R7 .....66.00
Ensley,Ala. T2 .....63.00
Fairfield,Ala. T2 .....63.00
Fontana,Calif. K1 ....82.00
Gary,Ind. C3 .....63.00
Geneva,Utah G1 .....63.00
Houston,Tex. S5 .....71.00
Ind.Harbor,Ind. I-2 ...63.00
Johnstown,Pa. B2 ....63.00
Lackawanna,N.Y. B2..63.00
LosAngeles B3 .....82.00
Munhall,Pa. C3 .....63.00
Seattle B3 .....82.00
So.Chicago C3,R2,W14.63.00
So.Duquesne,Pa. C3 ...63.00
So.SanFrancisco B3 ...82.00

Alloy (NT)
Bethlehem,Pa. B2 ....$66.00
Buffalo R2 .....66.00
Canton,O. R2, T7 ....66.00
Conshohocken,Pa. A3 ..70.00
Detroit R7 .....66.00
Fontana,Calif. K1 ....85.00
Gary,Ind. C3 .....66.00
Houston,Tex. S5 .....74.00
Ind.Harbor,Ind. Y1 ...66.00
Johnstown,Pa. B2 ....66.00
Lackawanna,N.Y. B2..66.00
LosAngeles B3 .....86.00
Massillon,O. R2 .....66.00
Midland,Pa. C18 .....66.00
Munhall,Pa. C3 .....66.00
Sharon,Pa. S3 .....66.00
So.Chicago C3,R2,W14.66.00
So.Duquesne,Pa. C3 ...66.00
Warren,O. C17 .....66.00
Youngstown Y1 .....66.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 .....$76.00
Cleveland R2 .....76.00
Fontana,Calif. K1 ....100.00
Gary,Ind. C3 .....76.00
Ind.Harbor,Ind. I-2 ...76.00
Massillon,O. R2 .....76.00
So.Chicago,Ill. R2 ....76.00
So.Duquesne,Pa. C3 ...76.00

SHEETS BARS (NT)
Fontana,Calif. K1 ....$86.00

SKELP
Aliquippa,Pa. J5 .....3.25
Munnall,Pa. C3 .....3.15
Warren,O. R2 .....3.15
Youngstown C3, R2 ....3.15

WIRE RODS
AlabamaCity,Ala. R2 ..3.85
Buffalo W12 .....3.85
Cleveland A7 .....3.85
Donora,Pa. A7 .....3.85
Fairfield,Ala T2 .....3.85
Fontana,Calif. K1 ....4.60
Houston,Tex. S5 .....4.25
Ind.Harbor,Ind. Y1 ...3.85
Johnstown,Pa. B2 ....3.85
Joliet,Ill. A7 .....3.85
LosAngeles B3 .....4.65
Minnequa,Colo. C10 ....4.10
Monessen,Pa. P7 .....3.85
No.Tonawanda,N.Y. B11.3.85
Pittsburg,Calif. C11 ....4.50
Portsmouth,O. P12 .....3.85
Roebling,N.J. R5 .....3.95
So.Chicago,Ill. R2 .....3.85
SparrowsPoint,Md. B2 ..3.95
Sterling,Ill.(1) N15 ....3.85
Struthers,O. Y1 .....3.85
Torrance,Calif. C11 ...4.65
Worcester A7 .....4.15

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.40
Aliquippa,Pa. J5 .....3.40
Bessemer,Ala. T2 .....3.40
Bethlehem,Pa. B2 .....3.45
Clairton,Pa. C3 .....3.40
Fairfield,Ala. T2 .....3.40
Fontana,Calif. K1 .....4.00
Gary,Ind. C3 .....3.40
Geneva,Utah G1 .....3.40
Houston,Tex. S5 .....3.80
Ind.Harbor,Ind. I-2 ...3.40
Johnstown,Pa. B2 ....3.45
KansasCity,Mo. S5 ....4.00
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 .....4.00
Minnequa,Colo. C10 ....3.75
Munhall,Pa. C3 .....3.40
Niles,Calif.(22) P1 ....4.02
Phoenixvile,Pa. P4 ....3.45
Portland,Oreg. O4 .....4.05
Seattle B3 .....4.05
So.Chicago,Ill. C3, W14.3.40
So.SanFrancisco B3 ....3.95
Torrance,Calif. C11 ....4.00
Weirton,W.Va. W6 .....3.40

Alloy Stand. Shapes
Clairton,Pa. C3 .....4.05
Fontana,Calif. K1 .....5.25
Munhall,Pa. C3 .....4.05
So.Chicago,Ill. C3 .....4.05

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.15
Bessemer,Ala. T2 .....5.15
Bethlehem,Pa.(14) B2 ..5.20
Clairton,Pa. C3 .....5.15
Fairfield,Ala. T2 .....5.15
Fontana,Calif. K1 .....5.75
Gary,Ind. C3 .....5.15
Geneva,Utah G1 .....5.10
Ind.Harbor,Ind. I-2, Y1.5.15
Johnstown,Pa. B2 .....5.20
Lackawanna,N.Y.(14)B2 5.20
LosAngeles B3 .....5.75
Munhall,Pa. C3 .....5.15
So.Chicago,Ill. C3 .....5.15
So.SanFrancisco B3 ....5.70
Struthers,O. Y1 .....5.15

Wide Flange
Bethlehem,Pa. B2 .....3.45
Lackawanna,N.Y. B2 ..3.45
Munhall,Pa. C3 .....3.40
So.Chicago,Ill. C3 .....3.40

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....5.20
Lackawanna,N.Y. B2 ..5.20
Munhall,Pa. C3 .....5.10
So.Chicago,Ill. C3 .....5.10

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....4.20
Lackawanna,N.Y. B2 ..4.20
Munhall,Pa. C3 .....4.20
So.Chicago,Ill. C3 .....4.20
Weirton,W.Va. W6 .....4.20

BEARING PILES
Munhall,Pa. C3 .....3.40
So.Chicago,Ill. C3 .....3.40

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.35
Bessemer,Ala. T2 .....5.35
Clairton,Pa. C3 .....5.35
Cleveland J5, R2 .....5.35
Conshohocken,Pa. A3 ..5.35
Ecorse,Mich. G5 .....5.60
Fairfield,Ala. T2 .....5.35
Fontana,Calif. K1 .....5.95
Gary,Ind. C3 .....5.35
Geneva,Utah G1 .....5.35
Ind.Harbor,Ind. I-2, Y1.5.35
Johnstown,Pa. B2 .....5.35
Munhall,Pa. C3 .....5.35
Pittsburgh J5 .....5.35
Sharon,Pa. S3 .....5.35
So.Chicago,Ill. C3 .....5.35
SparrowsPoint,Md. B2..5.35
Warren,O. R2 .....5.35
Youngstown Y1 .....5.35

PLATES, Open-Hearth Alloy
Claymont,Del. W16 ....4.50
Coatesville,Pa. L7 .....4.50
Conshohocken,Pa. A3 ..4.40
Fontana,Calif. K1 .....5.40
Gary,Ind. C3 .....4.40
Johnstown,Pa. B2 .....4.40
Munhall,Pa. C3 .....4.40
Sharon,Pa. S3 .....4.40
So.Chicago,Ill. C3 .....4.40
SparrowsPoint,Md. B2 ..4.40

FLOOR PLATES
Cleveland J5 .....4.55
Conshohocken,Pa. A3 ...4.55
Harrisburg,Pa. C5 .....4.55
Ind.Harbor,Ind. I-2 ....4.55
Munhall,Pa. C3 .....4.55
So.Chicago,Ill. C3 .....4.55

PLATES (Universal Mill)
Fontana,Calif. K1 .....4.40

PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.25

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.50
Aliquippa,Pa. J5 .....3.50
Ashland,Ky.(15) A10 ..3.50
Bessemer,Ala. T2 .....3.50
Clairton,Pa. C3 .....3.50
Claymont,Del. W16 ....3.60
Cleveland J5 R2 .....3.50
Coatesville,Pa. L7 .....3.60
Conshohocken,Pa. A3 ..3.60
Ecorse,Mich. G5 .....3.75
Fairfield,Ala. T2 .....3.50
Fontana,Calif. K1 .....4.10
Gary,Ind. C3 .....3.50
Geneva,Utah G1 .....3.50
Harrisburg,Pa. C5 .....3.85
Houston,Tex. S5 .....3.90
Ind.Harbor,Ind. I-2, Y1..3.50
Johnstown,Pa. B2 .....3.50
Lackawanna,N.Y. B2 ..3.50
Minnequa,Colo. C10 ....4.30
Munhall,Pa. C3 .....3.50
Pittsburgh J5 .....3.50
Seattle B3 .....4.40
Sharon,Pa. S3 .....3.50
So.Chicago,Ill. C3, W14.3.50
SparrowsPoint,Md. B2 ..3.50
Steubenville,O. W10 ....3.50
Warren,O. R2 .....3.50
Weirton,W.Va. W6 .....3.50
Youngstown C3, R2, Y1.3.50

PLATES, Wrought Iron
Economy,Pa. B14 .....7.85

PLATES, Ingot Iron
Ashland,c.l.(15) A10 ..3.75
Ashland,lcl(15) A10 ....4.25
Cleveland,cl R2 .....4.10
Warren,O.cl R2 .....4.10

BARS, Hot-Rolled Carbon
AlabamaCity, Ala. R2 ..3.45
Aliquippa,Pa. J5 .....3.45
Alton,Ill(1) L1 .....3.45
Atlanta,Ga. A11 .....3.60
Bessemer,Ala. T2 .....3.45
Buffalo R2 .....3.45
Canton,O. R2 .....3.45
Clairton,Pa. C3 .....3.45
Cleveland R2 .....3.45
Ecorse,Mich. G5 .....3.65
Emeryville,Calif. J7 ....4.20
Fairfield,Ala. T2 .....3.45
Fontana,Calif. K1 .....4.10
Gary,Ind. C3 .....3.45
Houston,Tex. S5 .....3.85
Ind.Harbor,Ind. I-2, Y1.3.45
Johnstown,Pa. B2 .....3.45
KansasCity,Mo. S5 ....4.05
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 .....4.15
Milton,Pa. B6 .....3.45
Minnequa,Colo. C10 ....3.85
Niles,Calif. P1 .....4.17
N.Tonawanda,N.Y. B11.3.45
Pittsburg,Calif. C11 ....4.15
Pittsburgh J5 .....3.45
Portland,Oreg. O4 .....4.20
Seattle B3, N14 .....4.20
So.Chicago C3, R2, W14.3.45
So.Duquesne,Pa. C3 ....3.45
S.SanFran.,Cal. B3 .....4.20
Struthers,O. Y1 .....3.45
Torrance,Calif. C11 ....4.15
Weirton,W.Va. W6 .....3.45
Youngstown C3, R2 ....3.45

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 .....3.45
Atlanta A11 .....3.60
Johnstown,Pa. B2 .....3.45
Lackawanna,N.Y. B2 ..3.45
Niles,Calif. P1 .....4.17
Pittsburgh(23) J5 .....3.45
Portland,Oreg. O4 .....4.20
SanFrancisco S7 .....4.00
Weirton,W.Va. W6 .....3.45

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....3.65

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2, T7 .....3.95
Clairton,Pa. C3 .....3.95
Ecorse,Mich. G5 .....4.25
Fontana,Calif. K1 .....4.95
Gary,Ind. C3 .....3.95
Houston,Tex. S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity, Mo. S5 ....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....5.00
Massillon,O. R2 .....3.95
Midland,Pa. C18 .....3.95
So.Chicago C3, R2, W14.3.95
So.Duquesne,Pa. C3 ....3.95
Struthers,O. Y1 .....3.95
Warren,O. C17 .....3.95
Youngstown C3 .....3.95

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. C3 .....4.20
Fontana,Calif. K1 .....4.95
Gary,Ind. C3 .....4.20
Youngstown C3 .....4.20

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.20
Atlanta A11 .....5.35
Bessemer,Ala. T2 .....5.20
Bethlehem,Pa. B2 .....5.20
Clairton,Pa. C3 .....5.20
Cleveland R2 .....5.20
Ecorse,Mich. G5 .....5.40
Fairfield,Ala. T2 .....5.20
Fontana,Calif. K1 .....6.25
Gary,Ind. C3 .....5.20
Ind.Harbor,Ind. I-2, Y1.5.20
Johnstown,Pa. B2 .....5.20
Lackawanna,N.Y. B2 ..5.20
LosAngeles B3 .....5.90
Pittsburgh J5 .....5.20
So.Duquesne,Pa. C3 ....5.20
So.SanFrancisco B3 ....5.95
Struthers,O. Y1 .....5.20
Youngstown C3 .....5.20

BARS, Cold-Finished Carbon
Aliquippa,Pa. K5 .....4.15
Ambridge,Pa. W18 .....4.15
BeaverFalls,Pa. M12,R2.4.15
Buffalo B5 .....4.15
Camden,N.J. P13 .....4.60
Carnegie,Pa. C12 .....4.15
Chicago W18 .....4.15
Cleveland A7, C20 .....4.15
Detroit P17 .....4.30
Donora,Pa. A7 .....4.15
Ecorse,Mich. G5 .....4.35
Elyria,O. W8 .....4.15
FranklinPark,Ill. N5 ....4.15
Gary,Ind. R2 .....4.15
Hammond,Ind. I.2, M13.4.15
Hartford,Conn. R2 .....4.55
Harvey,Ill. B5 .....4.15
LosAngeles R2 .....5.55
Mansfield,Mass. B5 .....4.55
Massillon,O. R2, R8 ....4.15
Midland,Pa. C18 .....4.15
Monaca,Pa. S17 .....4.15
Newark,N.J. W18 .....4.55
Plymouth,Mich. P5 .....4.40
Pittsburgh J5 .....4.10
Putnam,Conn. W18 .....4.55
Readville,Mass. C14 ....4.55
St.Louis,Mo. M5 .....4.55
So.Chicago,Ill. W14 ....4.15
SpringCity,Pa.(5) K3 ....4.55
Struthers,O. Y1 .....4.15
Waukegan,Ill. A7 .....4.15
Youngstown F3, Y1 .....4.15

BARS, Cold-Finished Alloy
Aliquippa,Pa. K5 .....4.90
Ambridge,Pa. W18 .....4.90
BeaverFalls,Pa. M12 ....4.90
Bethlehem,Pa. B2 .....4.90
Buffalo B5 .....4.90
Canton,O. R2, T7 .....4.90
Carnegie,Pa. C12 .....4.90
Chicago W18 .....4.90
Cleveland A7, C20 .....4.90
Detroit P17 .....5.05
Donora,Pa. A7 .....4.90
Elyria,O. W8 .....4.90
Gary,Ind. R2 .....4.90
Hammond,Ind. I.2, M13.4.90
Hartford,Conn. R2 .....5.20
Harvey,Ill. B5 .....4.90
Lackawanna,N.Y. B2 ..4.90
Mansfield,Mass. P5 .....5.20
Massillon,O. R2, R8 ....4.90
Midland,Pa. C18 .....4.90
Monaca,Pa. S17 .....4.90
Newark,N.J. W18 .....5.20
Plymouth,Mich. P5 .....5.10
So.Chicago,Il. R2, W14.4.90
Struthers,O. Y1 .....4.90
Warren,O. C17 .....4.90
Waukegan,Ill. A7 .....4.90
Worcester,Mass. A7 .....5.20
Youngstown F3, Y1 .....4.90

RAIL STEEL BARS
Chicago Hts.(3,4) C2, I-2 ..3.45
Dallas,Tex(4) S20 .....6.00
Franklin,Pa.(3, 4) F5 ..3.70
FortWorth,Tex.(26) T4 ..4.18
Huntngtn,W.Va.(3) W7 ..4.00
Marion,O.(3) P11 .....3.45
Moline,Ill.(3) R2 .....3.40
Williamsport(3) S19 .....3.70

BARS, Wrought Iron
Economy,Pa.(S.R.) B14.8.60
Economy,Pa.(D.R.)B14 11.00
Economy(Staybolt)B14 11.30
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ..13.50
Dover(Wrgt.Iron) U1 ..12.25
McK.Rks.(S.R.) L5 ....8.60
McK.Rks.(D.R.) L5 ..11.25
McK.Rks.(Staybolt) L5 12.75

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ...3.45
Alton,Ill.(6) L1 .....3.45
Atlanta A11 .....3.60
Buffalo R2 .....3.45
Cleveland R2 .....3.45
Emeryville,Calif. J7 ....4.20
Fairfield,Ala. T2 .....3.45
Fontana,Calif. K1 .....4.10
Gary,Ind. C3 .....3.45
Houston,Tex. S5 .....3.85
Ind.Harbor,Ind. I-2, Y1.3.45
Johnstown,Pa. B2 .....3.45
KansasCity,Mo. S5 ....4.05
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 .....4.15
Milton,Pa. B6 .....3.45
Minnequa,Colo. C10 ....4.25
Niles,Calif. P1 .....4.17
Pittsburgh,Calif. C11 ....4.15
Pittsburgh J5 .....3.45
Portland,Oreg. O4 .....4.20
SandSprings,Okla. S5 ..4.35
Seattle B3, N14 .....4.20
So. Chicago,Ill. R2 ....3.45
So.Duquesne,Pa. C3 ....3.45
So.SanFrancisco B3 ....4.20
SparrowsPoint,Md. B2 ..3.45
Struthers,O. Y1 .....3.45
Torrance,Calif. C11 ....4.15
Youngstown C3, R2 ....3.45

BARS, Reinforcing
(Fabricated; to Consumers)
Huntington,W.Va. W7 ..4.50
Johnstown, ¼-1" B2 ....4.35
LosAngeles B3 .....5.00
Marion,O. P11 .....4.40
Seattle B3, N14 .....5.10
So.SanFrancisco B3 ....5.00
SparrowsPt., ¼-1" B2 ..4.35
Williamsport,Pa. S19 ...4.35

SHEETS, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 ...3.35
Ashland,Ky.(8) A10 ....3.35
Butler,Pa. A10 .....3.35
Cleveland J5, R2 .....3.35
Conshohocken,Pa. A3 ..3.45
Detroit M1 .....4.15
Ecorse,Mich.(8) G5 ....3.55
Fairfield,Ala. T2 .....3.35
Fontana,Calif. K1 .....4.25
Gary,Ind. C3 .....3.35
Ind.Harbor,Ind. I-2, Y1.3.35
Irvin,Pa. C3 .....3.35
Lackawanna,N.Y. B2 ..3.35
Munhall,Pa. C3 .....3.35
Pittsburg,Calif. C11 ....4.05
Pittsburgh J5 .....3.35
Sharon,Pa. S3 .....3.50
So.Chicago,Ill. W14 ....3.35
SparrowsPoint,Md. B2 ..3.35
Steubenville,O. W10 ....3.35
Torrance,Calif. C11 ....4.05
Warren,O. R2 .....3.35
Weirton,W.Va. W6 .....3.35
Youngstown C3, Y1 .....3.35

SHEETS, Hot-Rolled Carbon Steel (19 gage and lighter)
AlabamaCity,Ala. R2 ...4.50
Dover,O. R1 .....4.65
Ind.Harbor,Ind. I-2 ....4.40
Mansfield,O. E6 .....4.15
Niles,O. N12 .....4.10
Torrance,Calif. C11 ....5.15

SHEETS, H-R (14 ga., heavier) High-strength Low-Alloy
Cleveland J5, R2 .....5.05
Conshohocken,Pa. A3 ..5.05
Ecorse,Mich. G5 .....5.25
Fairfield,Ala. T2 .....5.05
Fontana,Calif. K1 .....6.74
Gary,Ind. C3 .....5.05
Ind.Harbor,Ind. I-2, Y1.5.05
Irvin,Pa. C3 .....5.05
Lackawanna(35) B2 ....5.05
Pittsburgh J5 .....5.05
Sharon,Pa. S3 .....5.05
So.Chicago,Ill. C3 .....5.05
SparrowsPoint(36) B2 ..5.05
Warren,O. R2 .....5.05
Weirton,W.Va. W6 .....5.05
Youngstown, C3, Y1 ....5.05

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 .....6.20
Ecorse,Mich. G5 .....6.40
Fontana,Calif. K1 .....7.05
Gary,Ird. C3 .....6.20
Ind.Harbor,Ind. I-2, Y1.6.20
Irvin,Pa. C3 .....6.20
Lackawanna(37) B2 ....6.20
Pittsburgh J5 .....6.20
SparrowsPoint(38) B2 ..6.20
Warren,O. R2 .....6.20
Weirton,W.Va. W6 .....6.20
Youngstown Y1 .....6.20

UNIVERSITY OF MICHIGAN LIBRARIES

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.10
Cleveland J5, R2	4.10
Ecorse,Mich. G5	4.30
Fairfield,Ala. T2	4.10
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	5.00
Gary,Ind. C3	4.10
GraniteCity,Ill. G4	4.30
Ind.Harbor,Ind. I-2, Y1	4.10
Irvin,Pa. C3	4.10
Lackawanna,N.Y. B2	4.10
Middletown,O. A10	4.10
Pittsburg,Calif. C11	5.05
Pittsburgh J5	4.10
SparrowsPoint,Md. B2	4.10
Steubenville,O. W10	4.10
Warren,O. R2	4.10
Weirton,W.Va. W6	4.10
Youngstown Y1	4.10

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.40
Ashland,Ky.(8) A10	4.40
Canton,O. R2	4.40
Delphos,O. N16	5.40
Dover,O. R1	4.75
Fairfield,Ala. T2	4.40
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Kokomo,Ind. C16	4.50
MartinsFerry,O. W10	4.40
Niles,O. N12	4.65
Pittsburg,Calif. C11	5.15
SparrowsPoint,Md. B2	4.40
Steubenville,O. W10	4.40
Torrance,Calif. C11	5.15
Weirton,W.Va. W6	4.40

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3	6.75
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	4.95
Irvin,Pa. C3	4.95
Kokomo,Ind. C16	5.05
Niles,O. N12	5.20

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	4.65
Middletown,O. A10	4.65

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.25
Niles,O. R2 (28)	5.25
Weirton,W.Va. W6	5.10

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.05

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10	4.80
Gary,Ind. C3	4.80
Mansfield,O. E6	4.80
Middletown,O. A10	4.80
Niles,O. N12	4.80
Weirton,W.Va. W6	4.80

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.20

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50
Yorkville,O. W10	17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.45
Gary,Ind. C3	6.35
Irvin,Pa. C3	6.35
SparrowsPoint,Md. B2	6.45
Yorkville,O. W10	6.35

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	$7.05

SHEETS, Mfg. Ternes, 8 lb

Gary,Ind. C3	$8.10
Warren,O. R2	8.10
Yorkville,O. W10	8.10

BLUED STOCK, 29 Ga.

Yorkville,O. W10	6.00

SHEETS, Culvert No. 16	**Cu Alloy**	**Cu Fe**
Ashland A10	5.20	...
Canton,O. R2	5.25	5.70
Fairfield,Ala. T2	5.20	5.45
Gary C3	5.20	5.45
IndianaHarbor I-2	5.20	5.45
Irvin,Pa. C3	5.20	5.45
Kokomo C16	5.40	...
MartinsFy,O. W10	5.20	5.45
Pittsburg,Cal. C11	5.95	...
SparrowsPt. B2	5.20	...
Torrance,Cal. C11	5.95	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.45
Fairfield,Ala. T2	5.45

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.60
Cleveland R2	3.95
Ind.Harbor,Ind. I-2	3.60
Warren,O. R2	3.95

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.70
Middletown,O. A10	4.60
Warren,O. R2	4.70

SHEETS, Galvanized Ingot Iron No. 10 Flat

Ashland,Ky.(8) A10	4.65
Canton,O. R2	5.15
Ind.Harbor,Ind. I-2	4.80

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	4.90
Middletown,O. A10	4.90

SHEETS, Wrought Iron	**An'ld**	**Galv.**
Apollo,Pa. B14	12.00	15.50

SHEETS, Drum Body

Pittsburg,Calif. C11	4.05
Torrance,Calif. C11	4.05

SHEETS, ALUMINIZED

Butler,Pa. A10	7.75

SHEETS, Well Casing

Fontana, Calif. K1	4.80

TIN PLATE, Electrolytic (Base Box)	**0.25 lb**	**0.50 lb**	**0.75 lb**
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	**Field**	**Armature**	**Electric**	**Motor**	**Dynamo**
BeechBottom W10 (cut lengths)	...	...	6.70	7.95	8.75
Brackenridge,Pa. A4	...	...	7.20	8.45	9.25
GraniteCity,Ill. G4(cut lengths)	...	...	6.90	8.15	...
Ind.Harbor,Ind. I-2	6.40	6.70	(34)	...	...
Mansfield,O. E6 (cut lengths)	5.90	6.20	6.70	7.95	8.75
Niles,O. N12 (cut lengths)	...	6.20	6.70	...	...
Parkersburg F4 (cut lengths)	...	...	...	...	8.75
Vandergrift,Pa. C3	...	6.70	7.20	8.45	9.25
Warren,O. R2	6.40	6.70	7.20	8.45	9.25
Zanesville,O. A10	...	6.70	7.20	8.45	9.25

SHEETS, SILICON (22 Gage Base) Coils (Cut Lengths ½c lower) Transformer Grade	**72**	**65**	**58**	**52**
BeechBottom W10 (cut lengths)	9.30	9.85	10.55	11.35
Brackenridge,Pa. A4	9.80	10.35	11.05	....
Parkersburg F4 (cut lengths)	9.30	....	....	....
Vandergrift,Pa. C3	9.80	10.35	11.05	11.85
Warren,O. R2	9.80	....	....	....
Zanesville,O. A10	9.80	10.35	11.05	11.85

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	**T-100**	**T-90**	**T-80**	**T-73**
Butler,Pa. A10 (C.R.)	....	....	14.20	14.70
Vandergrift,Pa. C3	12.35	13.20	14.20	14.70

TIN PLATE, American COKE (Base Box)	**1.25 lb**	**1.50 lb**
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary, C3	7.30	7.50
Ind.Harbor I-2, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Aliquippa,Pa. J5	5.30
Follansbee,W.Va. F4	5.30
Gary,Ind. C3	5.30
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	5.30
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	5.30

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.40
Cleveland R2	4.40
Ecorse,Mich. G5	4.70
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Middletown,O. A10	4.40
Youngstown Y1	4.40

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	4.95
Conshohocken,Pa. A3	4.95
Ecorse,Mich. G5	5.15
Fairfield,Ala. T2	4.95
Fontana,Cal. K1	6.64
Gary,Ind. C3	4.95
Ind.Harb.,Ind. I-2, Y1	4.95
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	5.70
Sharon,Pa. S3	4.95
So.SanFrancisco(25) B3	5.70
SparrowsPoint,Md. B2	4.95
Warren,O. R2	4.95
Weirton,W.Va. W6	4.95
Youngstown C3, Y1	4.95

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.10
Carnegie,Pa. S18	5.10
Fontana,Calif. K1	6.30
Gary,Ind. C3	5.10
Houston,Tex. S5	5.50
KansasCity,Mo. S5	5.70
NewBritn,Conn.(10) S15	5.10
Sharon,Pa. S3	5.10
Youngstown C3	5.10

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.50
Warren,O. R2	3.85

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.25
Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	3.25
Atlanta A11	3.40
Bessemer,Ala. T2	3.25
Bridgeprt,Conn.(10) S15	3.50
Buffalo(27) R2	3.25
Butler,Pa. A10	3.25
Carnegie,Pa. S18	3.50
Conshohocken,Pa. A3	3.35
Detroit M1	4.05
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	3.25
Fontana,Calif. K1	4.40
Gary,Ind. C3	3.25
Houston,Tex. S5	3.65
Ind.Harbor,Ind. I-2, Y1	3.25
KansasCity,Mo.(9) S5	3.85
Lackawanna,N.Y. B2	3.25
LosAngeles B3	4.00
Milton,Pa. B6	3.25
Minnequa,Colo. C10	4.30
NewBritain(10) S15	3.50
N.Tonawanda,N.Y. B11	3.25
Pittsburg,Calif. C11	4.00
Riverdale,Ill. A1	3.25
SanFrancisco S7	4.00
Seattle B3, N14	4.25
Sharon,Pa. S3	3.50
So.Chicago,Ill. W14	3.25
So.SanFrancisco B3	4.00
SparrowsPoint,Md. B2	3.25
Torrance,Calif. C11	4.00
Warren,O. R2	3.25
Weirton,W.Va. W6	3.25
WestLeechburg,Pa. A4	*3.50*
Youngstown C3, Y1	3.25

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	9.50
Carnegie,Pa. S18	9.50
Cleveland A7	9.50
Dover,O. G6	9.50
Fontana,Calif. K1	11.15
Harrison,N.J. C18	9.50
NewBritn,Conn.(10) S15	9.50
Pawtucket,R.I.(11) N8	9.50
Pawtucket,R.I.(12) N8	9.80
Sharon,Pa. S3	9.50
Worcester,Mass. A7	9.80
Youngstown C8	9.50

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	4.75

STRIP, Cold-Finished, Spring Steel (Annealed)	**0.26-0.40C**	**0.41-0.60C**	**0.61-0.80C**	**0.81-1.05C**	**1.06-1.35C**
Bridgeport,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
Bristol,Conn. W1	...	...	6.85	8.80	...
Carnegie,Pa. S18	...	5.95	6.55	8.50	10.80
Cleveland A7	4.15	5.95	6.55	8.50	10.80
Dover,O. G6	4.15	5.95	6.55	8.50	10.80
FranklinPark,Ill. T6	4.40	6.10	6.70	8.65	...
Harrison,N.J. C18	...	...	6.85	8.80	11.10
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
NewCastle,Pa. B4	4.15	5.95	6.55	8.50	...
NewCastle,Pa. E5	4.50	5.95	6.55	8.50	10.80
NewYork W3	...	6.30	6.90	8.85	11.15
Pawtucket,R.I. N8: Cleve.orPitts.Base	4.70	5.95	6.55	8.50	10.80
Worcester,Base	4.65	6.25	6.85	8.80	11.10
Sharon,Pa. S3	4.50	5.95	6.55	8.50	10.80
Trenton,N.J. R5	...	6.25	6.85	8.80	11.10
Wallingford,Conn. W2	4.65	6.25	6.85	8.80	11.10
Weirton,W.Va. W6	4.15	5.95	6.55	8.50	10.80
Worcester,Mass. A7	4.45	6.25	6.85	8.80	11.10
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Youngstown C8	4.15	5.95	6.55	8.50	10.80
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	9.30	11.25	13.85
Harrison,N.J. C18	...	...	9.30	11.25	13.85

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	4.50
Berea,O. C7	5.60
Bridgeprt,Conn.(10) S15	4.50
Butler,Pa. A10	4.15
Cleveland A7, J5	4.15
Dearborn,Mich. D3	4.75
Detroit D2	4.75
Detroit M1	4.95
Dover,O.(40) G6	4.50
Ecorse,Mich. G5	4.35
Follansbee,W.Va. F4	4.50
Fontana,Calif. K1	5.75
FranklinPark,Ill. T6	4.30
Ind.Harbor,Ind. I-2	4.30
Lackawanna,N.Y. B2	4.15
LosAngeles C1	5.85
Mattapan,Mass. T6	5.00
Middletown,O. A10	4.15
NewBritain(10) S15	4.50
NewCastle,Pa. B4	4.50
NewCastle,Pa.(40) E5	4.50
NewHaven,Conn. D2	5.00
NewHaven,Conn. A7	4.65
NewYork W3	5.00
Pawtucket,R.I. R3	5.15
Pawtucket,R.I.(21) N8	5.00
Riverdale,Ill. A1	4.30
Rome,N.Y. R6	4.15
Sharon,Pa. S3	4.50
SparrowsPoint,Md. B2	4.15
Trenton,N.J.(13) R5	5.00
Wallingford,Conn. W2	5.00
Warren,O.(40) T5	4.50
Warren,O. R2	4.50
Weirton,W.Va. W6	4.15
Youngstown C8, (40)	4.50
Youngstown Y1	4.15

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.20
Dover,O. G6	6.20
Ecorse,Mich. G5	6.40
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.20
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.20
Weirton,W.Va. W6	6.20
Youngstown Y1	6.20

STRIP, Electro Galvanized

Weirton,W.Va. W6	4.15
Youngstown C8	4.15

Key to Producing Companies

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B14 A. M. Byers Co.
C1 Calif. Cold Rolled Steel
C2 Calumet Steel Div., Borg-Warner Corp.
C3 Carnegie-Illinois Steel
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve.Cold.Roll.MillsCo.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Son, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
B1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H4 Heppenstall Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K5 Kidd Drawn Steel Co.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	3.40
Riverdale,Ill. A1	3.40
Sharon,Pa. S3	3.65
Youngstown C3	3.40

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.90
Bartonville,Ill.(1) K4	5.90
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Fostoria,O. S1	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Milbury,Mass(12) N6	6.20
Monessen,Pa. P7, P16	5.90
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Struthers,O. Y1	5.90
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Williamsport,Pa. B2	6.00
Worcester A7,J4,T6,W12	6.20
Worcester,Mass. N6	6.20

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	5.35
Buffalo W12	5.35
Cleveland A7	5.35
Crawfordsville,Ind. M8	5.35
Dover,O. G6	5.35
Fostoria,O. S1	5.50
Kokomo,Ind. C16	5.35
FranklinPark,Ill. T6	5.70
Massillon,O. R8	5.35
Monessen,Pa. P7, P16	5.35
Pawtucket,R.I.(12) N8	6.00
Trenton,N.J. R5	5.65
Worcester A7, T6, W12	5.65

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	8.45
Buffalo W12	8.45
Chicago W13	8.45
Cleveland A7	8.45
Crawfordsville,Ind. M8	8.45
Fostoria,O. S1	8.45
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	8.45
Monessen,Pa. P16	8.45
Palmer,Mass. W12	8.75
Portsmouth,O. P12	8.45
Roebling,N.J. R5	8.75
Waukegan,Ill. A7	8.45
Worcester,Mass. A7,T6	8.75

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.55
Monessen,Pa. P16	10.80
Roebling,N.J. R5	10.80

WIRE, Manufacturers Bright, Low-Carbon

AlabamaCity,Ala. R2	4.50
Aliquippa,Pa. J5	4.50
Atlanta A11	4.60
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	4.50
Buffalo W12	4.50
Chicago W13	4.50
Cleveland A7, C20, R2	4.50
Crawfordsville,Ind. M8	4.60
Donora,Pa. A7	4.50
Duluth A7	4.50
Fairfield,Ala. T2	4.50
Fostoria,O.(24) S1	4.85
Houston S5	4.90
Johnstown,Pa. B2	4.50
Joliet,Ill. A7	4.50
KansasCity,Mo. S5	5.10
Kokomo,Ind. C16	4.60
LosAngeles B3	5.45
Minnequa,Colo. C10	4.75
Monessen,Pa. P7	4.50
Newark, 6-8ga. I-1	5.15
No.Tonawanda B11	4.50
Palmer,Mass. W12	4.80
Pittsburg,Calif. C11	5.45
Portsmouth,O. P12	4.50
Rankin,Pa. A7	4.50
So.Chicago,Ill. R2	4.50
So.SanFrancisco C10	5.45
SparrowsPoint,Md. B2	4.60
Sterling,Ill.(1) N15	4.50
Struthers,O. Y1	4.50
Torrance,Calif. C11	5.45
Waukegan,Ill. A7	4.50
Worcester, Mass. A7	4.80
Worcester,Mass. T6	4.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.55
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	5.55
Donora,Pa. A7	5.55
Duluth A7	5.55
Johnstown,Pa. B2	5.55
LosAngeles B3	6.50
Monessen,Pa. P7, P16	5.55
NewHaven,Conn. A7	5.85
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	6.50
Portsmouth,O. P12	5.55
Roebling,N.J. R5	5.85
So.Chicago,Ill. R2	5.55
SparrowsPoint,Md. B2	5.65
Struthers,O. Y1	5.55
Torrance,Calif. C11	6.50
Trenton,N.J. A7	5.85
Waukegan,Ill. A7	5.55
Worcester,Mass. A7	5.85

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.15
Monessen,Pa. P16	8.15
Roebling,N.J. R5	8.45
SparrowsPoint,Md. B2	8.25

WIRE, Merchant Quality (6 to 8 gage)

	An'ld	Galv.
AlabamaCity R2	5.35	5.60
Aliquippa J5	5.35	5.60
Atlanta A11	5.45	5.70
Bartonville(19) K4	5.35	5.60
Buffalo(31) W12	4.50	...
Cleveland A7	5.35	5.60
Crawfordsvil. M8	5.45	5.70
Donora A7	5.35	5.60
Duluth A7	5.35	5.60
Fairfield T2	5.35	5.60
Houston,Tex. S5	5.75	6.00
Johnstown B2	5.35	5.60
Joliet,Ill. A7	5.35	5.60
KansasCy.Mo. S5	5.95	6.20
Kokomo C16	5.45	5.70
LosAngeles B3	6.30	...
Minnequa C10	5.60	5.85
Monessen P7	5.35	5.60
Palmer(31) W12	4.80	...
Pitts.,Cal. C11	6.30	6.55
Prtsmth.(18) P12	5.35	5.60
Rankin A7	5.35	5.60
So.Chicago R2	5.35	5.60
So.S.Fran. C10	6.30	6.55
SparrowsPt. B2	5.45	5.70
Sterling,Ill.(1)N15	5.35	5.60
Struthers,O. Y1	5.35	5.60
Torrance,Cal. C11	6.30	...
Worcester A7	5.65	5.90

WIRE (16 gage)

	An'ld Stone	Galv. Stone
Aliquippa J5	9.80	11.30
Bartonville(1) K4	9.80	11.30
Cleveland A7	9.80	11.30
Crawfrdvil. M8	9.80	11.30
Fostoria,O. S1	9.90	11.40
Johnstown B2	9.80	11.30
Kokomo C16	9.80	11.30
Minnequa C10	10.05	11.80
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	10.15	11.65
Prtsmth.(18) P12	9.80	11.30
SparrowsPt. B2	9.90	11.40
Waukegan A7	9.80	11.30

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	126
Atlanta A11	128
Bartonville,Ill. K4	126
Crawfordsville M8	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Houston,Tex. S5	134
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
KansasCity,Mo. S5	138
Kokomo,Ind. C16	128
Minnequa,Colo. C10	131
Monessen,Pa. P7	126
Pittsburg,Calif. C11	146
Portsmouth,O.(18) P12	126
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
So.SanFran.,Calif. C10	146
SparrowsPoint, Md. B2	128
Sterling,Ill.(1) N15	126

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	116
Duluth A7	116
Franklin,Pa. F5	116
Huntington,W.Va. W7	116
Johnstown,Pa. B2	116
Joliet,Ill. A7	116
Marion,O. P11	116
Minnequa,Colo. C10	121
Moline,Ill. R2	112
So.Chicago R2	116
Williamsport,Pa. S19	*130*

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	116
Ala.City,Ala.,17-18ga.R2	198
Aliquippa,Pa.9-14½ga.J5	116
Atlanta A11	118
Bartonville,Ill.(19) K4	116
Crawfordsville,Ind. M8	118
Donora,Pa. A7	116
Duluth A7	116
Houston,Tex. S5	124
Fairfield,Ala. T2	116
Johnstown,Pa. B2	116
Johnstn,17ga.6" B2	190
Johnstn,17ga.,4" B2	193
Joliet,Ill. A7	116
KansasCity, Mo. S5	128
Kokomo,Ind. C16	118
Minnequa,Colo. C10	121
Monessen,Pa. P7	116
Pittsburg,Calif. C11	139
Portsmouth,O.(18) P12	116
Rankin,Pa. A7	116
So.Chicago,Ill. R2	116
Sterling,Ill. N15	116

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2	113
Atlanta A11	114
Bartonville,Ill.(19) K4	113
Chicago W13	113
Crawfordsville M8	115
Donora,Pa. A7	113
Duluth A7	113
Fairfield,Ala. T2	113
Joliet,Ill. A7	113
KansasCity,Mo. S5	125
Kokomo,Ind. C16	115
Minnequa,Colo. C10	118
Pittsburg,Calif. C11	137
So.Chicago,Ill. R2	113
So.SanFran.,Calif. C10	137
SparrowsPoint,Md. B2	115
Sterling,Ill.(1) N15	113

AXLES

Ind.Harbor,Ind. S13	5.25
Johnstown,Pa. B2	5.25

JOINT BARS

Bessemer,Pa. C3	4.40
Fairfield,Ala. T2	4.40
Ind.Harbor,Ind. I-2	4.40
Joliet,Ill. C3	4.40
Lackawanna,N.Y. B2	4.40
Minnequa,Colo. C10	4.40
Steelton,Pa. B2	4.40

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	5.60
KansasCity,Mo. S5	5.85
Lebanon,Pa. B2	5.60
Minnequa,Colo. C10	5.60
Pittsburgh J5	5.60
Seattle B3	6.10
So.Chicago,Ill. R2	5.60
Struthers,O. Y1	5.60
Youngstown R2	5.60

NAILS & STAPLES, Stock To Dealers & Mfrs. (7) Col.

AlabamaCity,Ala. R2	106
Aliquippa,Pa. J5	106
Atlanta A11	108
Bartonville,Ill.(19) K4	106
Chicago,Ill. W13	106
Cleveland A9	111
Crawfordsville,Ind. M8	108
Donora,Pa. A7	106
Duluth A7	106
Fairfield,Ala. T2	106
Galveston,Tex. D7	114
Houston,Tex. S5	114
Johnstown,Pa. B2	106
Joliet,Ill. A7	106
KansasCity,Mo. S5	118
Kokomo,Ind. C16	108
Minnequa,Colo. C10	111
Monessen,Pa. P7	106
Pittsburg,Calif. C11	125
Portsmouth,O. P12	106
Rankin,Pa. A7	106
So.Chicago,Ill. R2	106
SparrowsPoint,Md. B2	108
Sterling,Ill.(1) N15	106
Torrance, Calif. C11	126
Worcester, Mass. A7	112

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	5.35
Bartonville,Ill.(19) K4	5.35
Crawfordsville,Ind. M8	5.45
Donora,Pa. A7	5.35
Duluth A7	5.35
Johnstown,Pa. B2	5.35
Joliet,Ill. A7	5.35
Kokomo,Ind. C16	5.45
Minnequa,Colo. C10	5.60
Pittsburg,Calif. C11	6.30
Portsmouth,O. P12	5.35
Rankin,Pa. A7	5.35
So.Chicago,Ill. R2	5.35
SparrowsPoint,Md. B2	5.45
Worcester,Mass. A7	5.65

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$6.75
Wheeling,W.Va. W10	6.75

TIE PLATES

Fairfield,Ala. T2	4.20
Gary,Ind. C3	4.20
Ind.Harbor,Ind. I-2	4.20
Lackawanna,N.Y. B2	4.20
Minnequa,Colo. C10	4.20
Pittsburg,Calif. C11	4.35
Seattle B3	4.35
Steelton,Pa. B2	4.20
Torrance,Calif. C11	4.35
Weirton,W.Va. W6	4.20

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.10
Lebanon,Pa.(32) B2	8.85
Minnequa,Colo. C10	9.10
Pittsburgh O3, P14	9.10
Seattle B3	9.35

ROPE WIRE

	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.05	8.05	8.30
Buffalo W12	8.05	8.05	8.30
Cleveland A7	8.05	8.05	8.30
Donora,Pa. A7	8.05	8.05	8.30
Fostoria,O. S1	8.05	8.05	8.30
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P7, P16	8.05	8.05	8.30
NewHaven,Conn. A7	8.35	8.35	8.60
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	8.05	8.05	8.30
Roebling,N.J. R5	8.35	8.35	8.60
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	8.05	8.05	8.30
Trenton,N.J. A7	8.35	8.35	8.60
Waukegan,Ill. A7	8.05	8.05	8.30
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4, T6	8.35	8.35	8.60

RAILS

	Std. No. 1	Std. No. 2	Std. All	TeeRails 60 lb Under
Bessemer,Pa. C3	3.40	3.30	3.35	3.75
Ensley,Ala. T2	3.40	3.30	...	3.75
Fairfield,Ala. T2	...	...	...	3.75
Gary,Ind. C3	3.40	3.30	3.35	...
Huntington,W.Va. W7	...	...	...	3.75
Ind.Harbor,Ind. I-2	3.40	3.30	3.35	...
Johnstown,Pa. B2	...	...	...(16)	3.75
Lackawanna B2	3.40	3.30	...	3.75
Minnequa,Colo. C10	3.40	3.30	...	4.25
Steelton,Pa. B2	3.40	3.30	...	...
Williamsport,Pa. S19	...	...	...	3.75

Key to Producing Companies

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M10 Missouri-Illinois Furnace
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 New Eng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron&Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P 17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel

T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
V2 Vanadium Alloys Steel
V3 Vulcan.Crucible Steel Co
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

TOOL STEEL

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	21.00	18W,4Cr,3V	126.00
Extra Carbon	24.50	18W,4Cr,2V,9Co	185.50
Spec. Carbon	29.50-31.50	18W,4Cr,2V,6Co	169.50
Oil Hardening	32.00	18.25W,4.25Cr,1V,4.75Co	156.50
Cr Hot Wrk.	32.00	20.25W,4.25Cr,1.6V,12.25Co	293.50
Hi-Carbon-Cr	57.50	1.5W,4Cr,1V,8.5Mo	71.50
18W,4Cr,1V	100.00	6.4W,4.5Cr,1.9V,5Mo	76.50
18W,4Cr,2V	113.00	6W,4Cr,3V,6Mo	97.00

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, T7, U4, V2, V3

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) 3" & wider; over ½" to under 3" 5.50c.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(24) Deduct 0.35c for finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill shipments; to consumers, 4.93c.
(27) Bar mill sizes.
(28) Bonderized.
(31) Not annealed.
(32) Untreated.
(33) To jobbers, deduct 20 cents.
(34) 6.70c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 Ga. & lighter; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 4.75c. 0.035" and heavier.

UNIVERSITY OF MICHIGAN LIBRARIES

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	36.5	34.5	33.5	5.5	3.5	5.5
¼	6.0	0.42	33.5	31.5	30.5	5.5	3.5	6.5
⅜	6.00	0.57	29.0	27.0	26.0	0.5	+1.5	2.5
½	8.5	0.85	40.5	38.5	39.5	21.0	19.0	20.0
¾	11.5	1.13	43.5	41.5	42.5	25.0	23.0	24.0
1	17.0	1.68	46.0	44.0	45.0	28.0	26.0	27.0
1¼	23.0	2.28	46.5	44.5	45.5	28.5	26.5	27.5
1½	27.5	2.73	47.0	45.0	46.0	29.0	27.0	28.0
2	37.0	3.68	47.5	45.5	46.5	29.5	27.5	28.5
2½	58.5	5.82	48.0	46.0	47.0	30.0	28.0	29.0
3	76.5	7.62	48.0	46.0	47.0	30.0	28.0	29.0

Column A: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1½ percentage points lower on ⅛", 2 points lower on ¼", 3 points lower on ⅜", W10. Wheatland, Pa., 2 points lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, O. N3; Youngstown, plus 43% on 3½" and 4", R2; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 31% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y-1; Alton, Ill. (Lorain, O., base) L1.

Column D: Etna, Pa. N2; Monaca, Pa. quotes 1 pt lower on ½" through 3", P9; Sharon, Pa. M6, quotes 1 pt lower on ⅛", 1 pt higher on ⅜" and 1 pt lower on ½" through 3"; Butler, Pa., ⅛" through ⅜", F6; Benwood, W. Va., W10 except 3½ pts lower on ⅛", 2½ pts lower on ¼", 3 pts lower on ⅜" Wheatland, Pa., except 2 pts lower on ⅛", ¼" and ⅜"; W9. Following make ½" and larger: Lorain, N3; Youngstown, plus 24.5% on 3½" and 4", R2; Youngstown, Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 8 pts lower on ½" and larger continuous weld and 15.5% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	36.0	17.5	36.0	17.5
2½	58.5	5.82	39.0	20.5	39.0	20.5
3	76.5	7.62	39.0	20.5	39.0	20.5
3½	92.0	9.20	41.0	22.5	41.0	22.5
4	$1.09	10.89	41.0	22.5	41.0	22.5
5	1.48	14.81	41.0	22.5	41.0	22.5
6	1.92	19.18	41.0	22.5	41.0	22.5

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5; Lorain, N3; Youngstown, Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	12.36	14.39	13.96	13.96
1¼	13	14.63	17.05	14.19	16.54
1½	13	16.17	19.02	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.03	22.27	26.22
2¼	12	25.29	29.76	24.53	28.87
2½	12	27.71	32.58	26.88	31.60
2¾	12	29.36	34.53	28.48	33.49
3	12	30.82	36.27	29.90	35.18
3¼	11	35.87	42.22	34.79	40.95
3½	11	38.52	45.35	37.36	43.99
4	10	47.82	56.25	46.39	54.56
4½	9	63.37	74.59	61.47	72.35
5	9	73.37	86.32	71.17	83.73
6	7	112.62	132.51	....	....

Boiler tube producers include Babcock & Wilcox Tube Co., National Tube Co., Globe Steel Tubes Co., Pittsburgh Steel Co., Republic Steel Corp., Standard Tube Co.

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates Carbon Base 10%	Plates Carbon Base 20%	Strip Cold-Rolled Carbon Base 10% Both Sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Copper Base Both Sides
302	....	....	....	19.75	21.50–24.00	75.00
304	22.50	26.50	....	20.75	22.50–25.5	77.00
305	....	....	....	....	....	79.00
309	28.00	32.00	....	....	....	....
310	34.00	38.00	....	....	....	105.00
316	27.00	31.00	....	26.00	28.00–33.5	....
317	32.00	36.00	....	....	....	....
318	31.00	35.00	....	....	....	....
321	24.00	28.00	....	23.00	25.00	90.00
347	25.00	29.00	....	24.00	26.00–31.5	94.00
405	18.75	24.75	....	....	....	....
410	18.25	24.25	....	....	....	....
430	18.25	24.25	....	....	....	....
Nickel	31.00	41.00	31.50 41.00	....	....	88.00
Inconel	39.00	51.00	....	....	....	140.00
Monel	32.00	42.00	26.50 33.50	....	....	83.00
Copper*	....	....	20.70† 25.65‡	....	....	....

* Deoxidized. † 17.20c for hot-rolled. ‡ 22.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16 and Coatesville L7; nickel, inconel, monel-clad plates, Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam.. 27
- ⅝-in. & ⅝-in. 29
- ¾-in. and larger 26

Longer than 6 in.:
- All diams. 22

Lag bolts, all diams.:
- 6 in. and shorter 30
- over 6 in. long 28

Ribbed Necked Carriage. 26
Blank 40
Plow 40
Step, Elevator, Tap, and Sleigh Shoe 28
Tire bolts 20
Boiler & Fitting-Up bolts 37

NUTS

H.P. & C.P. Reg. & Heavy Square:
- ½-in. and smaller 25
- ⅝-in. & ⅝-in. 23
- ¾-in.-1½-in. 23
- 1⅝ in. and larger 16

H.P. Hex.:	Reg.	Heavy
½-in. & smaller	33	29
⅝-in. & ⅝-in..	28	25
¾-in.-1½-in. ..	25	23
1⅝ in. & larger	17	16

C.P. Hex.:		
½-in. & smaller	33	29
⅝-in. & ⅝-in..	30	27
¾-in. & 1½ in.	27	24
1⅝ in. & larger	20	17

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Hvy.	Reg.	Lght.
½-in. and smaller	35	41	41
⅝-in. & ⅝-in.	30	36	36
¾-in.-1½ in..	27	31	33
1⅝-in.&larger	17	21	..

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish ..... 63.5 & 10
Plated finishes ... 50 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ¼-in. through ⅝-in. .. 50
- ¾-in. through 1 in. ... 43

Longer than 6 in.:
- ¼-in. through ⅝-in. .. 33
- ¾-in. through 1 in. .. 13

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 46
1 in. and smaller diam. x over 6 in. 33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 41
¼-in. diam. & larger 24
N.F. thread, all diams. . 18

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.25c
⅞-in., under .....43 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers .....List to 50c off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb
17,18,20	60,72	16.00
8 to 16	48,60,72	16.50
7	48,60	17.75
6	48,60	19.00
4, 5⅛	40	19.50
3	40	20.50
2½	24,30	21.00
2	24,30	23.00

CARBON

40	100,110	7.50
35	100,110	7.50
30	84,110	7.50
24	72 to 104	7.50
17 to 20	34,90	7.50
14	60,72	8.00
10,12	60	8.25

STAINLESS STEEL

(Cents per pound)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	39.00	32.00	30.00
302...	39.00	34.50	30.00
303...	41.00	38.00	32.50
304...	41.00	36.50	31.50
309...	53.50	52.50	43.00
316...	54.50	56.50	47.50
321...	47.00	46.00	35.50
347...	51.50	50.00	40.00
410...	34.50	28.50	24.50
416...	35.00	35.00	25.00
420...	42.00	45.00	30.00
430...	37.00	29.00	25.00
501...	25.50	24.00	13.00
502...	26.50	25.00	14.00

Baltimore, Types 301 through 347 sheet, except 309 E2.
Baltimore, bars wire and structurals A10.
Brackenridge, Pa., sheets A4.
Bridgeville, Pa., bars, wire, sheets & strip except Type 309 sheets 54.00c, 316 sheets 55.50c; 309 strip 53.00c, 316 strip 57.50c; 309 bars and wire 43.50c, 316 bars and wire 48.50c U4.
Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.
Carnegie, Pa., strip except Types 303, 416, 501, 502 S18.
Cleveland, strip A7.
Detroit, strip, except Types 303, 309, 321, 416, 420, 501 and 502 M1.
Dunkirk,N.Y., bars, wire A4.
Duquesne, Pa., bars C3.
Fort Wayne, Ind., bars and wire, except Types 501 and 502 J6.
Gary, Ind., sheets except Type 416 C3.
Harrison, N. J., strip C18.
Harrison, N. J., Types 302, 304, 316 wire and strip D6.
Massillon, all products R2.
McKeesport, Pa., bars; sheets except Type 416 C3.
McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.
Middletown, O., sheets except Types 303, 416, 420, 501 and 502 A10.
Midland, sheets & Strip C18.
Munhall, Pa., bars C3.
Pittsburgh, sheets C18.
Reading, Pa., bars & strip C4.
So. Chicago, Ill., bars & structurals C3.
Syracuse, N. Y., bars, wire & structurals C18.
Titusville, Pa., bars except Type 309 43.50c, type 316 48.50c U4.
Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.
Washington, Pa., bars, sheets & strip J3.
Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 59.50c, strip 61.50c W4.
Watervliet, N. Y., structurals & bars A4.
Waukegan, bars & wire A7.
West Leechburg, Pa., strip, A4.
Youngstown, strip C8 .

COAL, CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 25.00
Tuluol, one deg...18.25-25.75
Industrial xylol ..19.75-27.50

Per ton bulk, ovens

Sulphate of ammonia .$32-45

Cents per pound, ovens

Phenol, 40 (carlots, returnable drums) 13.50
Do., less than carlots..14.25
Do., tank cars 12.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $37; less than 60%, $34.
Imported, net ton, duty paid, metallurgical grade, $39-40.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

	Cents
Sponge Iron:	
98+% Fe, carlots..	15.00
Swedish, c.i.f. New York, in bags	7.40-8.50
Electrolytic Iron:	
Annealed, 99.5% Fe	39.50
Unannealed, 99+% Fe	33.50
Unannealed 99+% Fe (minus 325 mesh)	48.50
Powder Flakes	44.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns.	70.00-135.00
Aluminum:	
Carlots, freight allowed	27.00
Atomized, 500 lb drums, freight allowed	30.00
Brass, 10-ton lots.	28.50-31.25
Copper:	
Electrolytic	31.75
Reduced	31.50
Lead	18.50
Manganese:	
Minus 100-mesh	52.00-55.00
Minus 35 mesh	48.00
Minus 200 mesh	56.00
Nickel unannealed	75.50
Nickel-Silver, 10-ton lots	41.75
Silicon	34.00
Solder (plus cost of metal)	8.50
Stainless Steel, 302	75.00
Tin	91.12
Zinc, 10-ton lots.	20.50-28.00

Tungsten:	Dollars
99%, minus 80 to 200 mesh, freight allowed, over 1000 lb	2.90
1000 lb	2.95
less than 1000 lb.	3.00
98.8%, minus 65 mesh, freight allowed, 1000 lb and over..	2.90
less than 1000 lb	3.00
Molybdenum:	
99%, minus 80 to 200 mesh, over 500 lb	2.25
200 to 500 lb	2.60
less than 200 lb	2.75
82-88%, freight allowed, 2000 lb and over..	2.40
less than 2000 lb..	2.45
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvil,fur. .$14.00-14.50
Connellsvil,fdry. .15.00-16.00
New River, foundry...19.00
Wise county, foundry..15.95
Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens .$22.00
Everett, Mass., ovens New England, del.‡ 23.40
Chicago, ovens 21.00
Chicago del. .....‡22.45
*Detroit, del. 24.91
Terre Haute, ovens ...21.20
Milwaukee, ovens 21.75
Indianapolis, ovens 20.75
Chicago, del. 24.12
Cincinnati, del. 23.67
Detroit, del. 24.65
Ironton, O., ovens 20.40
Cincinnati, del. 22.71
Painesville, O., ovens .21.90
Buffalo, del. 24.02
Cleveland, del. 23.62
Erie, del. 22.04
Birmingham, ovens 19.15
Birmingham, del. ...20.20
Philadelphia, ovens ...21.25
Neville Island,Pa.,ovens 21.00
Swedeland, Pa., ovens..21.20
St. Louis, ovens.....22.99
St. Louis, del. 24.12
Portsmouth, O., ovens..20.15
Cincinnati, del. 22.71
Detroit, ovens 21.65
Detroit, del. 22.65
Buffalo, del. 24.69
Flint, del. 24.09
Pontiac, del. 23.04
Saginaw, del. 24.40

Includes representative switching charge of: *, $1.05; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Galv. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140‡		Carbon	Floor
New York(city)	5.75	6.84	7.73	6.04	...	5.95	6.64	8.60	5.85	6.10	7.54
New York(c'try)	5.55	6.64	7.53	5.84	...	5.75	6.44	8.40	5.65	5.90	7.34
Boston (city) ..	5.95	6.75	7.37	5.90	...	5.80	6.39	8.70	5.95	6.28	7.48
Boston (c'try) .	5.75	6.55	7.17	5.70	...	5.60	6.19	8.50	5.75	6.08	7.28
Phila. (city) ..	6.60-6.70	6.75	7.10	5.90	...	5.85	6.46	8.40	5.70	5.90	7.00
Phila. (c'try)..	6.35-6.45	6.50	6.85	5.65	...	5.60	6.21	8.15	5.45	5.65	6.75
Balt. (city) ...	5.35	6.59	6.66	5.79	...	5.79	6.39	...	5.89	5.60	7.24
Balt. (c'try) ..	5.15	6.39	6.46	5.59	...	5.59	6.19	...	5.69	5.40	7.04
Norfolk, Va. ..	6.10	...	...	6.30	...	6.15	7.20	...	6.20	6.15	7.55
Richmond, Va..	5.35	...	6.90	5.63	...	5.53	6.30	...	5.63	5.45	7.13
Wash. (w'hse).	5.56	6.80	6.73	6.00	...	6.00	6.62	...	6.10	5.81	7.45
Buffalo (del.)..	5.35	6.15	7.10	5.61	...	5.35	5.95	10.10††[8]	5.55	5.85	7.15
Buffalo (w'hse).	5.15	5.95	6.90	5.41	...	5.15	5.75	9.90††[8]	5.35	5.65	6.95
Pitts. (w'hse)..	5.15	5.95*	6.60-6.70	5.20	6.15	5.10	5.75	9.55††	5.25	5.35	6.60
Detroit (w'hse).	5.33	6.08*	7.09	5.49	...	5.39	5.91	9.86††[8]	5.64	5.79	6.88
Cleveland (del.)	5.35	6.15	7.30	5.44	6.35	5.32	5.95	8.31	5.57	5.72	6.92
Cleve. (w'hse).	5.15	5.95	7.10	5.24	6.15	5.12	5.75	8.16	5.37	5.52	6.72
Cincin. (city)..	5.57	6.14	6.54	5.50	...	5.50	6.11	...	5.79	5.94	7.10
Chicago (city) .	5.35	6.15	7.05	5.30	...	5.30	5.85	9.75††[8]	5.45	5.60	6.80
Chicago (w'hse)	5.15	5.95	6.85	5.10	...	5.10	5.65	9.55††[8]	5.25	5.40	6.60
Milwaukee(city)	5.49	6.29	6.94	5.44	...	5.44	6.09	9.89††[8]	5.59	5.74	6.94
Milwau. (c'try)	5.29	6.09	7.14	5.24	...	5.24	5.89	9.69††[8]	5.39	5.54	6.74
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08††[8]	5.78	5.93	7.13
St. L. (w'hse).	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88††[8]	5.58	5.73	6.93
Kans. City(city)	5.95	6.75	7.60	5.90	...	5.90	6.55	...	6.05	6.20	7.60
KansCity(w'hse)	5.75	6.55	7.40	5.70	...	5.70	6.35	...	5.85	6.00	7.40
Omaha, Nebr. .	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'ham (del.)	5.30	6.10	6.30[2]	5.25	...	5.25	6.88	...	5.40	5.55	7.83
Birm'hm(w'hse)	5.15	5.95	6.15[2]	5.10	...	5.10	...	...	5.25	5.40	...
Los Ang. (city)	6.10	7.65	8.20	6.15	8.90	6.10	7.75	...	6.10	6.20	8.40
L. A. (w'hse)..	5.90	7.45	8.00	5.95	8.70	5.90	7.55	...	5.90	6.00	8.20
San Francisco .	6.50[9]	7.60[3]	7.50[3]	7.45[9]	8.25[3]	6.30[9]	7.55	...	6.30[9]	6.40[9]	8.50[9]
Seattle-Tacoma.	6.60	8.15[3]	...	6.85	...	6.35	8.50	10.10	6.20	6.35[7]	8.40[7]

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [8]—1000 to 1999 lb; [7]—300 to 999 lb; [9]—400 to 9999 lb.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., Ottawa, Ill., $106. Hard-fired, $142 at above points.

High-Heat Duty: Salina, Pa. $91; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., $86.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $80.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., $72; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., Chester, W. Va., New Cumberland, W. Va., $60.

Wire Cut: Chester, W. Va., Wellsville, O., New Cumberland, W. Va., $58.

MALLEABLE BUNG BRICK

St. Louis, Mo., Olive Hill, Ky., $96; Ottawa, Ill., $90; Beach Creek, Pa., $86.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $86; Hays, Pa., $91; Joliet or Rockdale, Ill., E. Chicago, Ind., $95; Lehi, Utah, Los Angeles, $101.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $84.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $85.

BASIC BRICK

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Burned chrome brick, $66; chemical-bonded chrome brick, $69; magnesite brick, $91; chemical-bonded magnesite, $80.

MAGNESITE

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ¾" grains; bulk, $33; single paper bags, $38.

DOLOMITE

(Base prices per net ton)

Domestic, dead-burned bulk; Bonne Terre, Mo., Blue Bell, Williams, Millvale, W. Va., Gibsonburg, Woodville, O., $12.25; Thornton, McCook, Ill., $12.35; Dolly Siding, Mo., $12.45; Martin, Millersville, Narlo, Clay Center, and Bettsville, O., Billmeyer, Plymouth Meeting, Pa., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports. After Jan. 25, 1950, increases or decreases, if any, in upper lake rail freight, dock handling charges and taxes thereon are for buyer's account.

Old range bessemer	$8.10
Old range nonbessemer	7.95
Mesabi bessemer	7.85
Mesabi nonbessemer	7.70
High phosphorus	7.70

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62% concentrates contract	16.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Wolframite	$24.50-$24.75
Scheelite	$27.50

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00

South African Transvaal

44% no ratio	$17.00-18.00
45% no ratio	17.30-18.30
48% no ratio	26.00
50% no ratio	27.00-27.50

Brazilian

44% 2.5:1 lump	$32.00

Rhodesian

45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00

Domestic—rail nearest seller

48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton, $65, Palmerton, Pa.; $66, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $172 per gross ton of alloy, cl., packed, $184; gross ton lots, packed, $199; less gross ton lots, packed, $216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: $174, f.o.b. Birmingham and Johnstown, Pa., furnaces; $172, Sheridan, Pa.; $175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $214; less gross ton lots, $231 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75e per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 35.5c; ton lot 31.25c, less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese Electrolytic: 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.95c per lb of alloy, carload packed, 9.70c, ton lot 10.60c, less ton 11.60c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk, 20.5c per lb of contained Cr. c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

(*Please turn to page* 150)

Fabricators Primed for War Work

Plants, expanded greatly since last war, have improved equipment. Conversion to large scale armament production could be made quickly. Larger metal supplies needed

New York—Some form of joint control for distribution of nonferrous metals by the government and industry appears necessary if further confusion is to be averted. This is especially true of copper, supplies of which are extremely tight.

Until producers know extent of armament requirements, including what fabricators will need metal, in what form, and when, they cannot safely or intelligently allocate available supplies.

To date, armament contracts placed with brass mills have been relatively light for direct or immediate needs. But they are mounting and will pick up momentum next quarter, although most longer range equipment programs are still in the "blue print" stage.

Supplies Tightening — Stocks of major nonferrous metals are lower and falling. Supplies of copper and zinc have been tightening steadily and deficits loom for defense, stockpiling and civilian requirements. If this becomes critical enough, civilian use will suffer. Excepting strike losses, producers are operating at capacity and several mines are on a seven-day work week schedule.

Some consideration has been given to reopening of high-cost mines through subsidy payments, but no definite move has been made to date. As a matter of fact, until anticipated needs are more clearly defined, production levels are uncertain.

Brass mills and other nonferrous metal fabricators can convert operations to armament production with only slight delay and the industry will be able to produce vastly more goods than it did during the early days of World War II. Plants will not have to be built and current shops are better equipped. Substantial expansion in the industry's capacity has been effected since the last war.

Before the Korean war started, some mills held moderate government contracts which subsequently have been increased. Now new ordnance orders are coming through.

Given the raw material, brass and copper mills are in position to do a bigger and better job, and to start doing it with little delay.

Metal Prices Tend Upward

New York—Tin prices swept past the $1 per pound mark last week and approximated the $1.03 level which the government supported from June 1, 1948 to Sept. 26, 1949. Many traders believe the government must step in again to stabilize the market.

Secondary aluminum and the brass and bronze ingot markets also moved higher, following an advance in scrap metal.

Producers of copper, lead and zinc held their selling prices unchanged in strong markets. Supplies are inadequate to meet demands, forcing sellers to allocate supplies on a voluntary basis.

Stocks of slab zinc dropped to only 19,687 tons at the beginning of the month, the lowest level recorded since November, 1948. Shipments were restricted to 84,846 tons while production amounted to only 77,868 tons. Unfilled orders at the end of July amounted to 65,368 tons.

The United States has purchased 34,000 troy ounces of platinum from the British government. It has arrived in this country and will be placed in the government's stockpile. It is a critical material used in making nitroglycerine and in the production of aircraft, ships, guns and tanks.

Aluminum Product Sales Rise

New York—Production of primary aluminum increased to 12,800,774 lb in June, the largest recorded since July, 1944. This brought the total for the second quarter to 360,707,827 lb, or about 12 per cent above the 322,425,008 lb produced in the first quarter of the year and the largest amount of metal turned out by the industry in any quarter since the second quarter of 1944.

Shipments of aluminum sheet and plate by members of the Aluminum Association, this city, totaled 271,157,929 lb in the second quarter, about 4.5 per cent above the 259,772,157 lb shipped in the first quarter. These statistics cover about 98 per cent of the United States aluminum industry.

Donald M. White, secretary of the Association, reports that member companies of the Association's Foundry Division shipped 2,479,705 lb of permanent-mold rough castings (excluding pistons) during June; these shipments had a total value of $1,100,600.

French Mines Get ECA Aid

Washington—Marshall Plan counterpart funds will aid the development of French zinc and lead production facilities to help meet France's requirements for these scarce materials and also contribute to United States stockpiles.

The Economic Cooperation Administration announced that 1.4 billion counterpart fund francs (about $4 million) will be advanced for the development project under a contract signed between ECA and Societe des Mines de Zellidja with the approval of the French government. The francs will be used to modernize and expand a zinc and lead producing mine owned by the French company at Bou-Beker in eastern French Morocco near Oujda.

The advances will be repaid by Zellidja over a period of seven years in the form of supplies of zinc, and possibly lead, for the U. S. stockpile. The francs are coming from the five per cent portion of the French counterpart fund (francs deposited by the French to match Marshall Plan dollar grants) available for the acquisition of materials in which U. S. resources are deficient.

In addition to the counterpart fund francs, ECA under a previous agreement is also advancing $3.6 million to the company through the Newmond Mining Corp., New York, an affiliate of Zellidja. The French Moroccan company also proposes to spend about 3 billion francs (about $8,570,000) of its own funds on the program, making a total investment of the equivalent of about $16,170,000.

It is estimated that the Zellidja mine's annual production, after the development program is completed, will reach 85,000 and 120,000 tons of lead and zinc concentrates, respectively. The mine is now producing about 25,000 tons of lead concentrates annually, and its production of zinc which began earlier this year, is expected to reach 32,000 tons of concentrates next year.

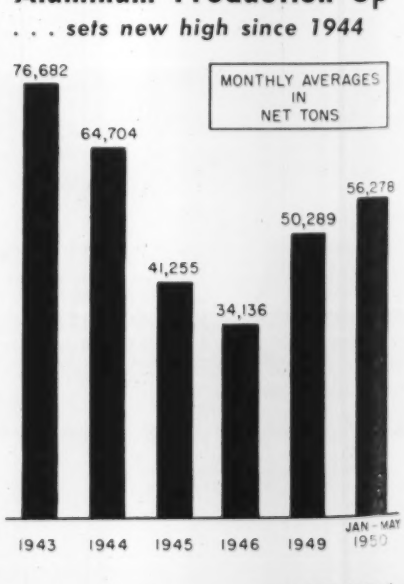
The mine expansion will help France become self-sufficient in the two metals and eventually enable her to export them. The program calls for development and mechanization of the mine, construction of an entirely new mill, including a crushing section, and the addition of grinding and flotation facilites.

Austria Seeks Scrap Copper Bids

Washington — Austrian importers are seeking bids on $40,000 worth of copper scrap. No satisfactory bids were received in tenders originally called for in June and new tenders are sought on the basis of immediate delivery, subject to 24-36 hour cable acceptance. The importers seek about 115 tons of material, including Nos. 1 and 2 copper wire, No. 1 heavy copper, mixed heavy copper, or light copper. Offers should be submitted in sealed envelopes, bearing the inscription "offert Autorisation 31-629-00-6278 Altkupfer" to the Federal Chancellory's Central Office for ERP Affairs, Hohenstaufengasse 3, Vienna 1.

Aluminum Production Up

. . . sets new high since 1944



NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 22.50c, Conn. Valley; Lake 22.62½c, Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 23.00c; 88-10-2 (No. 215) 32.50c; 80-10-10 (No. 305) 27.00c; No. 1 yellow (No. 405) 19.75c.

Zinc: Prime western 15.00c; brass special 15.25c; intermediate 15.50c, East St. Louis; high grade 16.10c, delivered.

Lead: Common 11.80c; chemical 11.90c; corroding 11.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.50c, pigs 16.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.75-21.25c; No. 12 foundry alloy (No. 2 grade) 20.25-20.50c; steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 21.00c; grade 2 20.50c; grade 3, 20.00c; grade 4, 19.50c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 22.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt $1.035.

Antimony: American 99-99.8% and over but not meeting specifications below 24.50c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 25.00c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%; Chinese 21.00c; English, 21.00c; Belgian, 21.50c, duty paid, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 48.00c; 25-lb pigs, 50.50c; "XX" nickel shot, 51.50c; "F" nickel shot or ingots, for addition to cast iron, 48.50c. Prices include import duty.

Mercury: Open market, spot, New York $77-$80 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $30.00 per lb contained Be, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.15 del.; special or patented shapes, $2.30.

Cobalt: 97-99%, $1.80 per lb for 500 lb (keg); $1.82 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 72.75c per oz.

Platinum: $74-$77 per ounce.

Palladium: $24 per troy ounce.

Iridium: $160 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill; based on 22.50-cent copper.)

Sheet: Copper 37.43; yellow brass 34.19; commercial bronze, 95%, 37.38; 90%, 36.93; red brass, 85% 35.96; 80%, 35.52; best quality, 35.04; nickel silver, 18%, 48.39; phosphor-bronze, grade A, 5% 55.11.

Rods: Copper, hot-rolled 33.28; cold-drawn 34.53; yellow brass free cutting, 28.54; commercial bronze, 95% 37.07; 90% 36.62; red brass 85% 35.65; 80% 35.21.

Seamless Tubing: Copper 37.47; yellow brass 37.20; commercial bronze 90% 39.59; red brass 85% 38.87; 80% 38.43.

Wire: Yellow brass 34.48; commercial bronze, 95% 37.67; 90% 37.22; red brass, 85% 36.25; 80% 35.81; best quality brass 35.33.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 26.67, l.c.l. 27.17, 100,000 lb lots 26.545; weatherproof, f.o.b. eastern mills, c.l. 28.10, l.c.l. 28.60, 100,000 lb lots 27.85; magnet, del., 15,000 lb or more 32.50, l.c.l. 33.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	27.4	...	...
0.135-0.096	12-48	27.9	...	...
0.095-0.077	12-48	28.4	26.5	30.1
0.076-0.061	12-48	29.0	26.7	30.3
0.060-0.048	12-48	29.2	26.9	30.6
0.047-0.038	12-48	29.6	27.1	30.9
0.037-0.030	12-48	30.0	27.5	31.4
0.029-0.024	12-48	30.4	27.8	31.8
0.023-0.019	12-36	31.0	28.2	32.3
0.018-0.017	12-36	31.6	28.8	33.1
0.016-0.015	12-36	32.3	29.4	34.0
0.014	12-24	33.2	30.2	35.1
0.013-0.012	12-24	34.1	30.9	36.0
0.011	12-24	35.1	31.8	37.2
0.010-0.0095	12-24	36.1	32.8	38.5
0.009-0.0085	12-24	37.3	33.9	40.0
0.008-0.0075	12-24	38.6	35.1	41.6
0.007	12-18	40.0	36.4	43.4
0.006	12-18	41.5	37.7	47.5

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	——Hexagonal—— R317-T4	17S-T4
0.125	48.5	....	....
0.156-0.203	41.5	....	....
0.219-0.313	38.5	....	....
0.344	37.5	....	47.5
0.375	37.0	46.0	44.5
0.406	37.0	....	....
0.438	37.0	46.0	44.5
0.469	37.0	....	....
0.500	37.0	46.0	44.5
0.531	37.0	....	....
0.563	37.0	....	42.0
0.594	37.0	....	....
0.625	37.0	43.5	42.0
0.656	37.0	....	....
0.688	37.0	....	42.0
0.750-1.000	36.0	41.0	39.5
1.063	36.0	....	38.0
1.125-1.500	35.0	39.5	38.0
1.563	35.0	....	37.0
1.625	34.0	....	37.0
1.688-2.000	34.0	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more, $17.00 per cwt; add 50c cwt, 10 sq ft to 140 sq ft. Pipe: Full coils, $17.00 per cwt. Traps and bends: List prices plus 45%.

ZINC

Sheets, 20.75c, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 20.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 19.00c; over 12-in., 20.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 69.00c. Strip, cold-rolled, 75.00c. Rods and shapes, 65.00c. Plates, 67.00c. Seamless tubes, 98.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 53.00c. Strip, cold-rolled 56.00c. Rods and shapes, 51.00c. Plates, 52.00c. Seamless tubes, 86.00c. Shot and blocks, 46.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb. 55.00-59.00c; 25 to 99 lb. 45.00-49.00c; 100 lb to 5000 lb, 38.00c.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 25.50c; 5 tons and over 26.00c; 1 to 5 tons, 26.50c; less than 1 ton 27.00c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 34.09c; oval 33.59c; cast 32.12c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 51.40c, under 1000 lb 49.40c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,000 lb, 17.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 28.00c; over 200 lb, 27.00c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 65.00c; 10,000 to 30,000 lb, 63.00c; 3000 to 10,000 lb, 67.00c; 500 to 3000 lb, 68.00c; 100 to 500 lb, 70.00c; under 100 lb, 73.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 29.50c; 400-lb bbl. 27.50c up to 10,000 lb, 27.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 44.6c, 10 or more drums 42.6c, f.o.b. Niagara Falls, N. Y.; 45.85c and 43.85c, respectively, del. Cleveland or Philadelphia.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Heavy Clean	Ends Rod	Turnings Clean
Copper	19.50	19.50	18.75
Yellow Brass	16.75	16.50	15.50
Commercial Bronze			
95%	18.50	18.25	17.75
90%	18.375	18.125	17.625
Red brass			
85%	18.125	17.875	17.375
80%	17.875	17.625	17.125
Best Quality (71-80%)	17.50	17.25	....
Muntz metal	15.75	15.50	15.00
Nickel, silver, 10%	19.12½	18.87½	9.56¼
Phos. bronze, A	19.75	19.50	18.50
Naval brass	16.12½	15.87½	15.37½
Manganese bronze	16.12½	15.87½	15.25

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 19.75; No. 2 copper 18.75; light copper 17.75; composition red brass 17.00; radiators 14.00; heavy yellow brass 13.00.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 19.75; No. 2 copper 18.75; light copper 17.75; refinery brass (60% copper) per dry copper content 17.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 18.00-18.25; No. 2 16.75-17.00; light copper 15.75-16.00; No. 1 composition red brass 14.50-14.75; No. 1 composition turnings 14.00-14.25; mixed brass turnings 9.00-9.25; new brass clippings 15.25-15.50; No. 1 brass rod turnings 13.50-13.75; light brass 9.00-9.25; heavy yellow brass 10.25-10.50; new brass rod ends 13.75-14.00; auto radiators, unsweated 11.25-11.50; cocks and faucets, 13.00-13.25; brass pipe 14.00-14.25.

Lead: Heavy 9.75-10.00; battery plates 5.25-5.50; linotype and stereotype 11.50-11.75; electrotype 9.75-10.00; mixed babbitt 9.75-10.00.

Zinc: Old zinc 8.50-8.75; new die cast scrap 8.25-8.50; old die cast scrap 5.50-5.75.

Tin: No. 1 pewter 50.00-52.00; block tin pipe 70.00-72.00; No. 1 babbitt 45.00-47.00.

Aluminum: Clippings 2S 12.50-13.00; old sheets 9.50-10.00; crankcase 9.50-10.00; borings and turnings 6.50.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Aug. 10	22.50	11.80	15.00	103.50	17.50	24.50	48.00	72.75
Aug. 9	22.50	11.80	15.00	101.50	17.50	24.50	48.00	72.75
Aug. 8	22.50	11.80	15.00	99.25	17.50	24.50	48.00	72.75
Aug. 4-7	22.50	11.80	15.00	98.50	17.50	24.50	48.00	72.75
Aug. 3	22.50	11.80	15.00	97.75	17.50	24.50	48.00	72.75
Aug. 2	22.50	11.80	15.00	98.00	17.50	24.50	48.00	72.75
Aug. 1	22.50	11.80	15.00	97.50	17.50	24.50	48.00	72.75
July Avg.	22.50	11.46	15.00	89.68	17.50	24.50	48.00	72.75
July 31	22.50	11.80	15.00	95.50	17.50	24.50	48.00	72.75
July 28-29	22.50	11.80	15.00	94.75	17.50	24.50	48.00	72.75
July 26-27	22.50	11.80	15.00	97.50	17.50	24.50	48.00	72.75
July 24-25	22.50	11.80	15.00	96.00	17.50	24.50	48.00	72.75
July 21-22	22.50	11.80	15.00	93.00	17.50	24.50	48.00	72.75
July 20	22.50	11.80	15.00	91.00	17.50	24.50	48.00	72.75
July 19	22.50	11.80	15.00	89.50	17.50	24.50	48.00	72.75

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumer prices, except as otherwise noted, including brokers' commissions, as reported to STEEL, Aug. 10, 1950; gross tons
Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Aug. 10	$38.58
Aug. 3	37.33
July 1950	37.04
Aug. 1949	20.86
Aug. 1945	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	*$41.00**
No. 2 Heavy Melt.	*38.00*
No. 1 Busheling	*41.00**
No. 1 Bundles	*41.00**
No. 2 Bundles	*37.00*
Heavy Turnings	37.00-38.00
Machine Shop Turnings	*31.00-31.50†*
Mixed Borings, Turnings	*31.00-31.50†*
Short Shovel Turnings	*35.50*
Cast Iron Borings	*32.50-33.50*
Low Phos. Steel	*47.50-48.50*

Cast Iron Grades

No. 1 Cupola Cast.	*41.00-42.00*
No. 1 Machinery Cast	*47.00-48.00*
Charging Box Cast	*40.00-41.00*
Heavy Breakable Cast	*39.00-40.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*47.00-47.50*
Rails, Random Lengths	*46.00-46.50*
Rails, 2 ft. and under	*51.00-51.50*
Rails, 18 in. and under	*52.00-52.50*
Railroad Specialties	*49.50-50.00*
Axles	*45.00-46.00*
Angles, Splice Bars	*46.00-47.00*

* Nominal, brokers paying $42-$43 for No. 1 grades.
† Crushers' buying prices.

CLEVELAND

No. 1 Heavy Melt. Steel	*$40.50-41.00*
No. 2 Heavy Melt. Steel	*36.00-36.50*
No. 1 Busheling	*40.50-41.00*
No. 1 Bundles	*40.50-41.00*
No. 2 Bundles	*30.00-31.00*
Machine Shop Turnings	*27.50-28.00*
Mixed Borings, Turnings	*30.50-31.00*
Short Shovel Turnings	*30.50-31.00*
Cast Iron Borings	*30.50-31.00*
Low Phos.	*42.50-43.00*

Cast Iron Grades

No. 1 Cupola	*48.00-49.00*
Charging Box Cast	*44.00-45.00*
Stove Plate	*43.00-44.00*
Heavy Breakable Cast	*41.00-42.00*
Unstripped Motor Blocks	*34.00-35.00*
Brake Shoes	*36.00-37.00*
Clean Auto Cast	*48.00-49.00*
No. 1 Wheels	*44.00-45.00*
Burnt Cast	*38.00-39.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*46.00-46.50*
R.R. Malleable	49.00-50.00
Rails, 3 ft and under	*52.50-53.50*
Rails, 18 in. and under	*53.50-54.50*
Rails, Random Lengths	48.00-49.00
Cast Steel	41.50-42.00
Railroad Specialties	45.00-46.00
Uncut Tires	49.00-50.00
Angles, Splice Bars	50.00-50.50

VALLEY

No. 1 Heavy Melt. Steel	*$43.00-43.50*
No. 2 Heavy Melt. Steel	37.00-37.50
No. 1 Bundles	*43.00-43.50*
No. 2 Bundles	*33.00-33.50*
Machine Shop Turnings	*33.00-33.50*
Short Shovel Turnings	*35.00-35.50*
Cast Iron Borings	*35.00-35.50*
Low Phos.	45.00-45.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	*46.00-46.50*

PHILADELPHIA

No. 1 Heavy Melt. Steel	*$36.50-37.00**
No. 2 Heavy Melt. Steel	*34.00-35.00**
No. 1 Busheling	*35.00-35.50**
No. 1 Bundles	*36.50-37.00**
No. 2 Bundles	*29.00-30.00**
Machine Shop Turnings	*27.00*
Short Shovel Turnings	29.00
Mixed Borings, Turnings	*25.00-26.00*
Low Phos. Punchings and Plate, elec. fur. grade	*41.50-42.50*
Low Phos. Plate, 5 ft & Under	*41.50-42.50*
Elec. Furnace Bundles	*39.00-40.00*
Heavy Turnings	*37.00-38.00*
No. 1 Chemical Borings	34.00
Knuckles and couplers	*43.00*
Steel car wheels	*43.00*

Cast Iron Grades

No. 1 Cupola Cast	36.00
No. 1 Machinery Cast	*40.00-41.00*
No. 1 Yard Cast	*35.00-36.00*
Charging Box Cast	*37.00*
Heavy Breakable Cast	*37.00*
Clean Auto Cast	*40.00-41.00*
No. 1 Wheels	*44.00-45.00*
Malleable	*49.00-50.00*

* Nominal.

CINCINNATI

No. 1 Heavy Melt. Steel	*$39.00*
No. 2 Heavy Melt. Steel	*33.00*
No. 1 Busheling	*39.00*
No. 1 Bundles	*39.00*
No. 2 Black Bundles	*33.00*
No. 3 Bundles	26.00
Machine Shop Turnings	23.00
Short Shovel Turnings	26.00
Mixed Borings, Turnings	25.00
Cast Iron Borings	26.00

Cast Iron Grades

No. 1 Cupola Cast	*49.00*
Charging Box Cast	*38.00*
Stove Plate	33.00
Heavy Breakable Cast	*40.00*
Unstripped Motor Blocks	29.00
Brake Shoes	*28.00*
Clean Auto Cast	*49.00*
Drop Broken Cast	*51.00*
Low Phos., 18 in. and under	*50.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*42.00*
R.R. Malleable	44.00
Rails, Rerolling	*47.00*
Rails, Random Lengths	*44.00*
Rails, 18 in. and under	*52.00*

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	$28.50-29.50
No. 1 Bundles	*37.50-38.50*
No. 2 Bundles	26.00-27.00
No. 1 Busheling	*35.50-36.50*
Machine Shop Turnings	23.00-24.00
Forge Flashings	36.00-37.00
Short Shovel Turnings	25.00-26.00
Cast Iron Borings	25.00-26.00
Punchings & Plate Scrap	38.50-39.50

Cast Iron Grades

No. 1 Cupola Cast	40.00-41.00
Heavy Breakable Cast	33.00-34.00
Clean Auto Cast	44.00-45.00

BUFFALO

No. 1 Heavy Melt. Steel	$36.50-37.00
No. 2 Heavy Melt. Steel	33.00-33.50
No. 1 Busheling	33.00-33.50
No. 1 Bundles	34.00-34.50
No. 2 Bundles	31.00-31.50
Machine Shop Turnings	27.00-28.00
Mixed Borings, Turnings	27.00-28.00
Cast Iron Borings	27.00-28.00
Short Shovelings	29.00-30.00
Low Phos.	38.50-39.00

Cast Iron Grades

No. 1 Cupola	*36.50-37.50*
No. 1 Machinery	*39.50-40.00*
Malleable	32.50-33.00

Railroad Scrap

Rails, 2 ft. and under.	46.50-47.00
Rails, random size	40.50-41.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$32.00-33.00*
No. 2 Heavy Melt. Steel	26.00-27.00
No. 1 Busheling	28.00-29.00
No. 1 Bundles	*32.00-33.00*
No. 2 Bundles	25.00-25.50
Machine Shop Turnings	*20.00-21.00*
Mixed Borings, Turnings	*20.00-21.00*
Short Shovel Turnings	*22.00-23.00*
Punchings & Plate Scrap	31.00-32.00
Low Phos. Plate, 5 ft & under	*32.00-33.00*
Elec. Furnace Bundles	*32.00-33.00*

Cast Iron Grades

No. 1 Cupola Cast	*29.00-30.00*
No. 1 Machinery	30.00-31.00
Charging Box Cast	*29.00-30.00*
Heavy Breakable	*29.00-30.00*
Unstripped Motor Blocks	21.00-22.00

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$29.00-30.00
No. 2 Heavy Melt. Steel	*24.00-24.50*
No. 1 Bundles	29.00-30.00
Machine Shop Turnings	*21.00-21.50*
Short Shovel Turnings	*23.00-23.50*
Mixed Borings, Turnings	*20.00-20.50*
No. 1 Busheling	*29.00-29.50*
Bar Crops and Plate	34.50-35.50
Punchings & Plate Scrap	34.50-35.50
Chemical Borings	*21.50-22.00*

Cast Iron Grades

No. 1 Cupola Cast	*31.00-32.00*
Mixed Cast	*29.00-29.50*
Heavy Breakable Cast	27.50-28.50
Stove Plate	*28.00-28.50*

CHICAGO

No. 1 Heavy Melt. Steel	*$38.00†*
No. 2 Heavy Melt. Steel	*36.00†*
No. 1 Bundles	*38.00†*
No. 2 Bundles	31.00
Machine Shop Turnings	26.00-27.00
Mixed Borings, Turnings	26.00-27.00
Short Shovel Turnings	29.00-30.00
Cast Iron Borings	29.00-30.00
Low Phos.	44.00-45.00
Elec. Furnace Bundles	38.00-39.00
Heavy Turnings	31.00-32.00
Cut Structurals	44.00-45.00

Cast Iron Grades

No. 1 Cupola Cast	*48.00-50.00*
Clean Auto Cast	*49.50-50.50*
No. 1 Wheels	*39.00-40.00*
Stove Plate	*38.00-39.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	39.00-40.00
Malleable	*46.00-47.00*
Rails, Rerolling	*54.00-56.25*
Rails, Random Lengths	45.00-46.00
Rails, 2 ft and under.	49.00-50.00
Rails, 18 in. and under	51.00-52.00
Railroad Specialties	*45.00-46.00*
Angles, Splice Bars	45.00-46.00

† Brokers' buying prices.

BIRMINGHAM

No. 1 Heavy Melt. Steel	*$32.00-33.00*
No. 2 Heavy Melt. Steel	*27.00-28.00*
No. 1 Busheling	29.00-30.00
No. 2 Bundles	*26.00-28.00*
Machine Shop Turnings	25.00-26.00
Mixed Borings, Turnings	*23.00-24.00*
Short Shovel Turnings	27.00-28.00
Cast Iron Borings	*27.00-28.00*
Bar Crops and Plate	37.00-38.00
Cut Structurals	37.00-38.00

Cast Iron Grades

No. 1 Cupola Cast	40.00-41.00
Stove Plate	*35.00-36.00*
No. 1 Wheels	33.00-34.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*35.00-36.00*
R.R. Malleable	nominal
Rails, Rerolling	*39.00-40.00*
Rails, 3 ft and under	*44.00-45.00*
Angles and Splice Bars	40.00-41.00

ST. LOUIS

No. 1 Heavy Melt. Steel	*$38.00-39.00*
No. 2 Heavy Melt. Steel	32.00-33.00
No. 1 Bundles	36.00-38.00
No. 2 Bundles	32.00-33.00
No. 3 Bundles	27.00-29.00
Machine Shop Turnings	*26.00-27.00*
Short Shovel Turnings	*27.00-28.00*

Cast Iron Grades

No. 1 Cupola Cast	39.00-41.00
Charging Box Cast	*36.00-37.00*
Heavy Breakable Cast	35.00-36.00
Brake Shoes	37.00-38.00
Clean Auto Cast	40.00-42.00
Burnt Cast	35.00-36.00

Railroad Scrap

R.R. Malleable	*45.00-46.00*
Rails, Rerolling	48.00-50.00
Rails, Random Lengths	*40.00-42.00*
Rails, 3 ft and under.	45.00-46.00
Uncut Tires	*42.00-43.00*
Angles, Splice Bars	*45.00-46.00*
Railroad Specialties	*44.00-45.00*

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$22.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Bundles	18.00
No. 2 Bundles	17.00
No. 3 Bundles	15.00
Machine Shop Turnings	9.00

Cast Iron Grades

No. 1 Cupola Cast	32.00-34.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Rails, Random Lengths	22.00

SEATTLE

No. 1 Heavy Melt. Steel	$24.00
No. 2 Heavy Melt. Steel	24.00
No. 1 Busheling	21.50
Nos. 1 & 2 Bundles	22.00
No. 3 Bundles	*18.00*
Machine Shop Turnings	*15.00*
Mixed Borings, Turnings	*15.00*
Punchings & Plate Scrap	*30.00-32.50*
Cut Structurals	*30.00-32.50*

Cast Iron Grades

No. 1 Cupalo Cast	*30.00-35.00*
Heavy Breakable Cast	*30.00*
Stove Plate	*25.00-27.50*
Unstripped Motor Blocks	*30.00*
Malleable	*30.00*
Brake Shoes	*30.00*
Clean Auto Cast	*35.00*
No. 1 Wheels	*32.50*

Railroad Scrap

No. 1 R.R. Heavy Melt	*25.00*
Railroad Malleable	*30.00*
Rails, Random Lengths	*26.00*
Angles and Splice Bars	*25.00*

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$23.50
No. 2 Heavy Melt. Steel	21.50
Nos. 1 & 2 Bundles	17.50
No. 3 Bundles	14.50
Machine Shop Turnings	*11.00*
Mixed Borings, Turnings	*8.00*
Punchings & Plate Scrap	32.00

Cast Iron Grades

No. 1 Cupola Cast	38.00-39.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	23.50
Rails, Rerolling	39.50

HAMILTON, ONT.

(Delivered prices)

Heavy Melt.	$30.00
No. 1 Bundles	30.00
Mechanical Bundles	28.00
Mixed Steel Scrap	28.00
Mixed Borings, Turnings	23.00
Rails, Remelting	30.00
Rails, Rerolling	33.00
Busheling	24.50
Bushelings new factory, prep'd	28.00
Bushelings new factory, unprep'd	23.00
Short Steel Turnings	23.00

Cast Iron Grades

Cast	40.00-43.00*

* F.o.b. shipping point.

Sheets, Strip . . .

Sheet and Strip Prices, Page 131 & 132 & 133

Cleveland—Consumers are expending great effort seeking to build inventories, but they are not meeting with much success. Mills are refusing to increase customer quotas. Buyers are being told to cover military needs out of their current allotments since the producers are fully committed for months ahead. Mill tonnage carryover from third to fourth quarter will be substantial. At least one month's production in last quarter seems certain to be blanked out to care for the overflow. This coupled with larger military needs carrying priorities, and possible diversion of some sheet facilities to production of light plates, indicates progressive intensification of the supply shortage lies ahead.

New York—As more raw steel has been going into sheets than other products, sheets will be hardest hit by diversion of steel to defense requirements. Hence, sheet makers are moving with caution in allocating tonnage over remainder of the year.

Boston—Narrow cold strip capacity is taken through next quarter, but scheduling will be subject to revisions. Hot strip inventories vary with converters and all are anxious about fourth quarter shipments. Scheduling of sheets beyond October is delayed. Demand is marked by new and heavier inquiry for alloys and stainless. Latest grain bin storage needs approach 45,000 tons of galvanized.

Philadelphia—Sheet consumers expect quotas will be substantially cut in fourth quarter, due primarily to heavy arrearages. Carryovers at the end of this quarter are expected to average around six weeks. Cutting also into new tonnage for most consumers will be some diversion for national emergency requirements.

Pittsburgh—Sellers report increasing number of military inquiries. Tonnage involved is still relatively small, and in most instances is not being scheduled until October and November. Some trade authorities contend success of voluntary allocations depends on full acceptance by all producers of their share in specific programs. Allegheny Ludlum Steel Corp. is quoting $3.50 per 100 pound base at West Leechburg, Pa., on hot-rolled carbon strip; up $5 per ton.

Cincinnati—Sheet mills are scheduling government contracts in progressively increasing tonnage. So far voluntary priorities have not seriously disrupted flow of sheets for domestic end-use. Carryover into fourth quarter will be greater than originally estimated.

Chicago—By exercising tight control over distribution of sheet and strip, mills have held in check amount of carryover into fourth quarter. One producer expects about two weeks' arrearage, only half the time required for making shipments of most other products current with orders. Extreme pressure for tonnage is generated by companies fearing allocations will cut their steel supplies. Some would like to increase produc-

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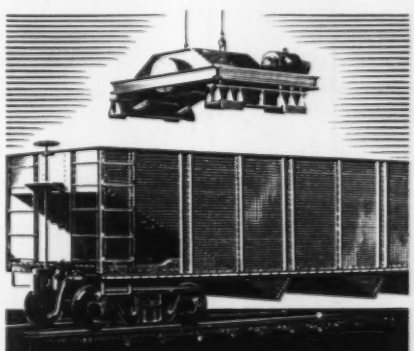

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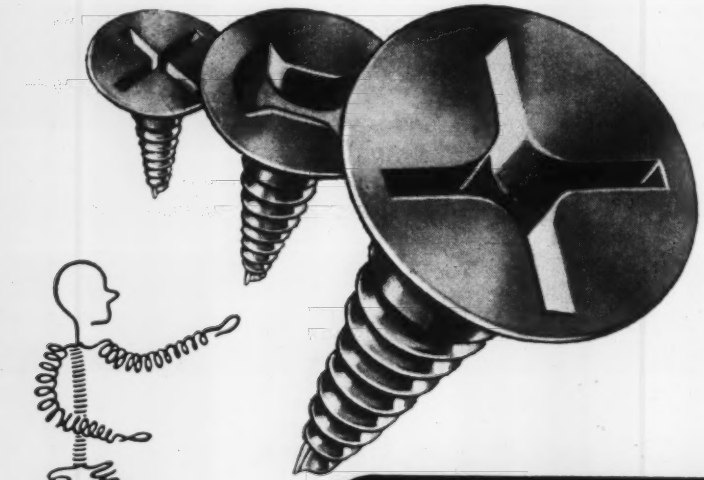
TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS



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This new wire delivers the desired upsetting and die forming qualities with a high degree of uniformity due to its excellent flow properties. Production reports show that die and plug life are often more than doubled . . . finished product rejections are minimized . . . the cost of expensive final inspections is reduced. The superior plating qualities of "special processed" wire further assure a better finished product.

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STEEL & WIRE CO.
PEORIA . . . ILLINOIS

Special Analysis Wire, Setting New Standards of Performance

tion to take advantage of consumer "scare" buying of durables.

Los Angeles—Fabricators are pessimistic over the outlook for sheet supplies. Even favorable positions on producers' allocation lists do not get tonnage to consumers under 180 days.

San Francisco—Sheet demand is heavier and supplies tighter. Virtually all material is for civilian production.

Steel Bars . . .

Bar Prices, Page 131

Pittsburgh—Cold finishers not distributing output on a monthy allotment basis are booked through 1950, and some are tentatively accepting first quarter tonnage without specifying delivery. Mill allotments of hot-rolled material to cold finishers will not likely be altered throughout August and September. Thus most interests are expected to maintain 5 days per week operating pace throughout this period. Integrated mills report a growing volume of inquiries for military needs.

New York—Most bar sellers are not fully committed for remainder of the year, but demand is far in excess of supply. Demand for alloy bars has increased sharply to a point where producers are screening requirements closely so as to eliminate as much as possible tonnage sought purely for substitution.

Boston—Carbon bar producers are making no new commitments in some cases, though limited capacity is open for fourth quarter. The few consumers holding armament contracts are reluctant to cover them within regular quotas, want new tonnage.

Philadelphia—Hot carbon bar consumers are shopping for tonnage with little success. Fourth quarter promises are short of anticipated needs. Certain mills have not set up allotments for the entire quarter, but customers expect they will receive less than heretofore. Increasing number of inquiries is being issued for tonnage for government work.

Cleveland—Bar mills are under heavy pressure for shipments, but they are unwilling or unable to accept much additional business pending clarification of the outlook with respect to government requirements over coming months. Military business already is beginning to come through. While such tonnage demand is small in relation to total volume, expectations are it will surge about fourth quarter.

Chicago—Surge in demand for bars reflects only a little actual military ordering. Recent gain in buying of alloys, which will be in heavier demand as military materiel procurement increases, stems mainly from peacetime users, including those who are willing to pay extra for alloy as a substitute material.

Rail steel bar interests are trying with only limited success to hold finished steel prices down. Calumet Steel Division, Borg-Warner Corp., increased merchant bars to 3.45c at Chicago Heights, and effective Aug. 14, Franklin Steel Division of the company quotes 3.70c at Franklin, Pa., for both merchant bars and unfabricated reinforcing bars.

Inland To Expand Capacity

Cleveland—Arthur G. McKee & Co., this city, have been awarded contract for the design and construction of a complete new open-hearth plant of four 250-ton furnaces and auxiliary facilities for Inland Steel Co., Chicago, at its No. 2 plant, Indiana Harbor Works, East Chicago, Ind. The plant is scheduled for completion in 1951.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 131

Pittsburgh—Reinforcing bar demand continues to improve. Output is falling well behind new inquiries. Re-rollers are experiencing substantial increase in orders with most interests booked through remainder of year. Sharp upturn in rerolling rail prices forced West Virginia Steel & Mfg. Co., Huntington, W. Va., to advance merchant rail steel bars $11 per ton to $4 per 100 pound base Aug. 1.

Cleveland—Fear of allocations later this year is stimulating active coverage of reinforcing needs for projected building. Some jobs are being pushed ahead in hope of beating the rising supply shortage. Small tonnage dominates current activity and sellers are parcelling out tonnage. Imported bars are relieving the shortage for some fabricators.

Chicago—Suppliers of reinforcing steel and related products are limiting their bidding to contractors they accommodate regularly. Smaller jobs are preferred in the interest of conserving inventories and serving as many customers as possible.

Los Angeles—Doubt as to future availability of steel supplies is accelerating building. Fabricators' backlogs are rising. Price & Pearson Co. has been awarded a $1,111,400 contract for the Rosecrans Blvd. bridge over the Los Angeles river.

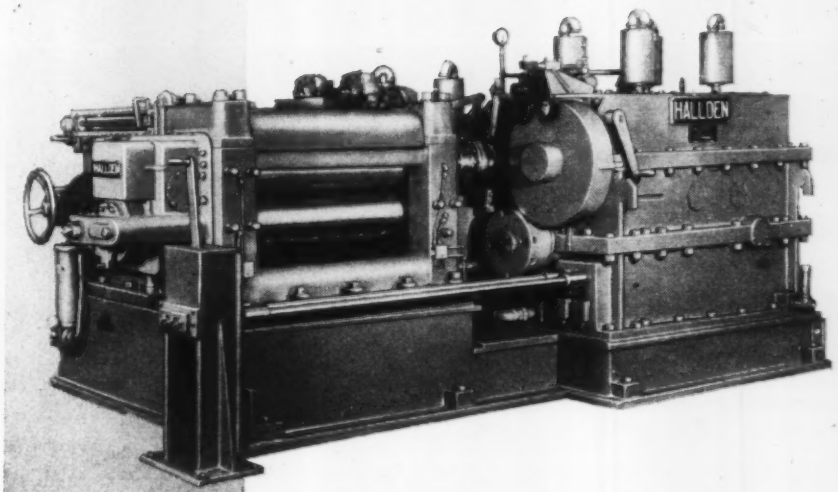
Plates . . .

Plate Prices, Page 131

Philadelphia—Plate mills are marking time on commitments for last quarter. More than enough tonnage is in prospect to keep them fully engaged for remainder of the year, but until they can see more clearly what railroad and defense requirements are going to be and what arrangements are going to be made on voluntary allocations producers are moving slowly. Demand for light gage material is particularly pressing, and Alan Wood Steel Co. is now rolling some strip plate on its new strip mill. Meanwhile, its regular plate department went down for repairs Aug. 1.

Boston—Where usual sources have reduced fourth quarter plate allocations, users are unable to make up losses at other mills. Some tank shops have built up backlogs. Railroad cars and large diameter pipe account for a large slice of plate tonnage. Metropolitan District commission, Boston, closes Aug. 17 on approximately 10,000 ft, 30 and 36-in.

HALLDEN AUTOMATIC SHEARS



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steel pipe, mostly 30-in., for installation, Lynn, Mass.

Pittsburgh—Pressure for prompt deliveries is increasing with miscellaneous consumers attempting to augment inventories. Plate fabricators do not expect any change in their allotment quotas this month and are hopeful September quotas likewise will remain intact. Increased demand for ship repairs, barge construction, pipe lines and freight cars are anticipated throughout the fourth quarter.

Chicago—Full month's production will be required by some district plate mills to correct third quarter's oversold condition. Some interests say pressure is greater for light plates than for any other product. This is intensified by the railroads' scurry to place new orders with car builders.

Birmingham—Plate market outlook is about as uncertain as it has been in months. The Pullman plant, idled by a month-long strike, has heavy car order booking and others are in prospect. It will need large plate tonnage. Inventory building continues on a large scale.

Seattle—Small plate shops have fair backlogs. Several tank projects are pending while two large industrial firms plan local expansions involving considerable plate tonnage.

Semifinished Steel . . .

Semifinished Prices, Page 131

Pittsburgh — Semifinished is in tighter supply than at any time in recent years. All available capacity is being utilized but is insufficient to support full finishing mill schedules. Prices for hot rolled strip are said to range between $140 and $150 a ton delivered Chicago district, up $10 in the past two weeks. Prices on other items have advanced similarly. Conversion interests report they cannot find rolling time for ingots made available to them.

Chicago—Careful policing by themselves has helped mills drastically restrict amount of finished steel entering the market through so-called irregular channels. Mills are anxious to learn the circumstances whenever their steel crops up in the gray market. To prevent any irregular disposition of conversion steel, one interest permits only end-users to make conversion arrangements.

Tubular Goods . . .

Tubular Goods Prices, Page 134

Boston—Drain on jobbers' steel pipe stocks is heavy. All are taking full October quotas. Mills are accepting some direct shipments for October and beyond, but demand has subsided. Mechanical tubing deliveries have lengthened, some producers temporarily not entering orders in the cold drawn range over 1½-in. Inquiries include 1600 tons for a Kentucky refinery and 7000 tons. Commonwealth pier, Boston. Worth Steel Co., Claymont, Del., has contracted with Algonquin Gas Transmission Co. for 24 and 26-in. welded steel pipe, about 55,000 tons, should the latter company win approval for

a natural gas pipe line to New England.

San Francisco—Continued fast pace of home building has supported heavy demand for cast iron pipe. Supplies are relatively scarce. United States Pipe & Foundry Co., East Burlington, N. J., plans to have a $2.5 million plant in operation here in about a year. Output largely will be for the petroleum and utility industries.

Seattle—War conditions have stimulated interest in cast iron pipe, but high prices and deferred deliveries are a severe handicap in competition with other types of pipe. Several sizable tonnages are pending. Steel pipe is in improved demand.

Tin Plate . . .

Tin Plate Prices, Page 132

San Francisco—Coffee grinders are actively buying containers due partly to fears of a war-created shortage.

Structural Shapes . . .

Structural Shape Prices, Page 131

Cleveland—Rush is on among structural fabricators to get in as much steel tonnage as possible before supply limitations are imposed by government regulations. Standard shape deliveries from the mills have been steadily lengthening over recent weeks and there is little chance buyers will be able to materially add to inventories beyond current mill quotas. Builders, anticipating further tightening in supplies, are specifying actively and many projects are being stepped up. Several fabricators in this area are importing building steel products from Europe.

New York—Public work dominates structurals but there is a rush of miscellaneous private inquiry noted. Fabricators are moving cautiously in accepting new work. Some actually have taken more work than they have steel for and are pressing the mills for heavier allotments.

Boston—Fabricated structural steel buying is now based on delivery rather than price. Shops are booked into fourth quarter, some beyond. Railroad car needs and reappearance of Bailey bridge inquiries are tightening supply. New contracts include 1600 tons, 11 stringer bridges, Acton-Littleton, Mass. to a Cambridge shop.

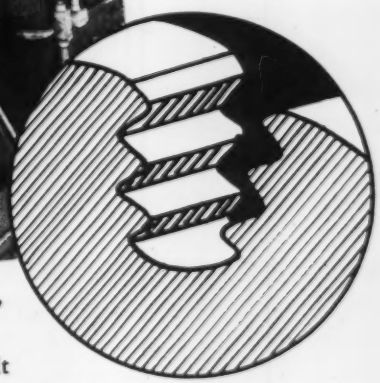
Philadelphia—Structural delivery schedules are sharply extended because of tightening in steel supply. Shape mills are running behind on commitments and are beginning to blank out periods in an effort to become current. Some distress cases among general contractors are beginning to appear due to failure of structural shipments to arrive on schedule.

Chicago—Deliveries on fabricated structural steel range five to six months. Extended backlogs of mills is the reason. In the case of one local shape producer, tonnage rolled in October will apply to third quarter carryover, leaving only November and December for allocation to fabricators. The Korean war has brought out building projects at an accelerated pace.

Los Angeles—Municipalities think

"ThredKuT 99 smooths out tough "PINE TREE" Broaching Job!

Inset below. Sketch of "pine tree" slot broached in jet engine disc.



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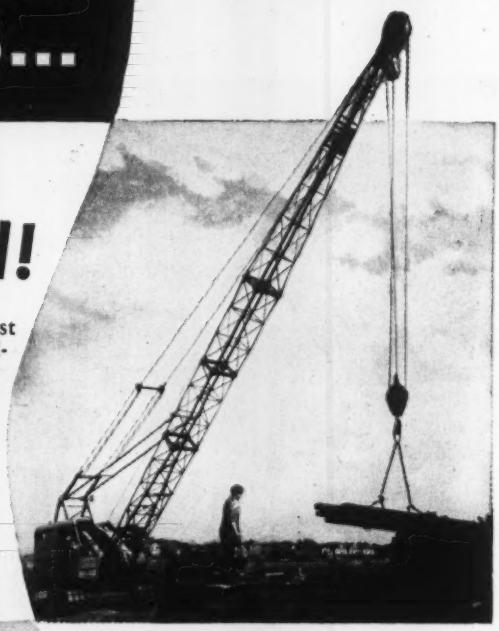

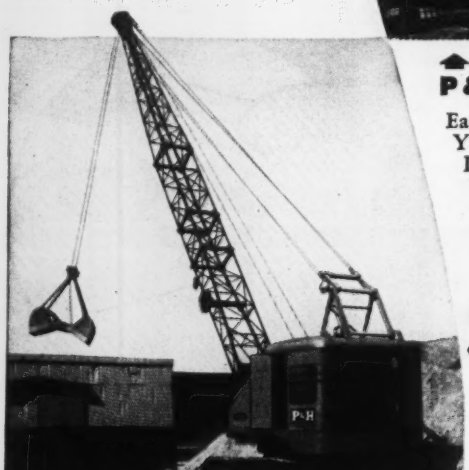

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Easier operation and safer handling. You'll have smooth, responsive P&H Direct Acting Hydraulic Control. Working in out-of-the-way places and close quarters . . . save time . . . save money . . . with the P&H simplified method of steering and braking.

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For swifter handling of bulk materials, anywhere in the yard! Not restricted to areas served by trackage. Wide crawlers and all-weather cabs permit year-'round efficient service.

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For fast, low-cost scrap handling, you can't beat a P&H Crawler Crane with magnet. Quickly converts to crane, clamshell, dragline.

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P&H Industrial Crawler Cranes Built in Models for all Yard Requirements

prices will remain high indefinitely into the future. Many public jobs shelved for extended periods, awaiting lower prices, are being given the go-ahead. Although the lowest of six bids for construction of Morningside High School was 30 per cent over estimates, the contract was awarded R. J. Daum Construction Co. on its low bid of $821,085.

San Francisco—Demand for structurals is good for current projects. Fabricators are buying also for inventory. Several new projects have been hurried into action by the Korean war and several others are due for action.

Seattle—Fabricators report heavy inquiry for small tonnages. One large plant has 30 days' backlog. There is some hesitancy in making heavy forward commitments.

Wire . . .

Wire Prices, Page 133

Cleveland — Manufacturing consumers and jobbers are taking all the wire tonnage they can lay their hands on in hope of building inventories before strict allocations are applied. Wire drawers are screening all orders carefully. They are anxious to avoid widespread rejuggling of schedules in event fourth quarter brings a flood of military orders. Nonintegrated wiremakers are having difficulty in obtaining adequate supplies of wire rods from integrated mills. Quotas to the small wire drawers, in some instances, have been cut by one-half.

Boston—Producers are under pressure for additional October tonnage which in most cases can not be supplied. Demand for heading wire is high with screw requirements covering broad range of fabricated goods.

Warehouse . . .

Warehouse Prices, Page 135

Boston—Most warehouses are sold out on sheets and stocks are not much better on plates. Structural and carbon bar stocks are also depleted. Distributors are screening inquiries and cutting down larger orders. Warehouses report some mills holding back on fourth quarter allocations, others being sold out on most critical items.

Philadelphia—Warehouse buying is causing further shrinkage in stocks, especially sheets and plates. Distributors are running several days behind on deliveries where cutting has to be done.

Pittsburgh—Distributors are rejecting orders from mill customers attempting to supplement inadequate mill shipments. Warehouses are unable to meet regular customers needs because of depleted stocks. Distribution of most items is being restricted to customers' essential needs. Efforts to build steel stocks are fruitless in most instances. Some distributors are more than 10 days behind on deliveries. July shipments were up 10 to 15 per cent on daily average basis over June.

Cleveland—Flood of inquiry coming to warehouses from distant points is being cold-shouldered. Distributors' stocks in all categories are down alarmingly and they have all they can do to take care of their regular cus-

tomers. Mill shipments are increasingly delayed. A sheet tonnage scheduled for July delivery to a warehouse will not be received until December. Consumers are getting some relief by taking foreign steel which has been coming into this area in substantial quantities. Some of this steel is delivered by vessel direct from Europe. It runs largely to building products but some wire and sheets have been included. Military demand is quickening, though still small in relation to overall business.

Cincinnati—Buying rush combined with shrinking mill shipments combine to unbalance warehouse stocks.

Rails, Cars . . .

Track Material Prices, Page 133

New York—Freight car buying continues heavy. Domestic freight car awards last month were 30,065, largest monthly figure since 1924.

Domestic freight car deliveries declined slightly last month, primarily because of vacation shutdowns, to 3464. July production included 15,030 box cars, 599 hopper cars, 521 gondola cars, 466 refrigerator cars, 145 stock cars, 128 tank cars and 10 flat cars.

Backlogs as of Aug. 1, totaled 67,084 cars compared with 40,585 on July 1 and 36,564 on Aug. 1, 1949.

Pig Iron . . .

Pig Iron Prices, Page 130

New York—District pig iron consumption is increasing steadily. Some bomb nose contracts have been let.

Alan Wood Steel Co. advanced prices on all grades $2 a ton to $50, Swedeland, Pa., for basic; $50.50, No. 2 foundry; $51, malleable; $51.50, bessemer.

Prices on foreign iron have stiffened.

Boston—Shipments are heavier as consumers pad inventories moderately. Foundries are melting more, but few are operating at capacity. Textile machinery builders are operating around 60 per cent. Mystic furnace has stepped up production. This furnace, under mutual contract agreements, must melt a minimum of 13,000 tons in any one or two months of a quarter to establish costs for prices in the following quarter.

Advance of $2 a ton at Swedeland, Pa., has made Bethlehem, Pa., the governing base on deliveries to Philadelphia. With the Bethlehem base prices unchanged and the freight $2.39, not including the 3 per cent federal tax, the delivered price is $50.89 on No. 2 foundry.

Pittsburgh—Merchant foundry iron distribution is under voluntary allocation with demand exceeding supply. Augmented freight car construction has forced sharp upturn in foundry activity. Increased demand for specialty castings for military end uses is noted. Nearly depleted iron stocks of foundries has forced many shops to increase ratio of scrap to iron in melting. Some large interests have made additional large tonnage commitments for Swedish and German iron at prices well above domestic levels.

Buffalo—To the surprise of sellers,

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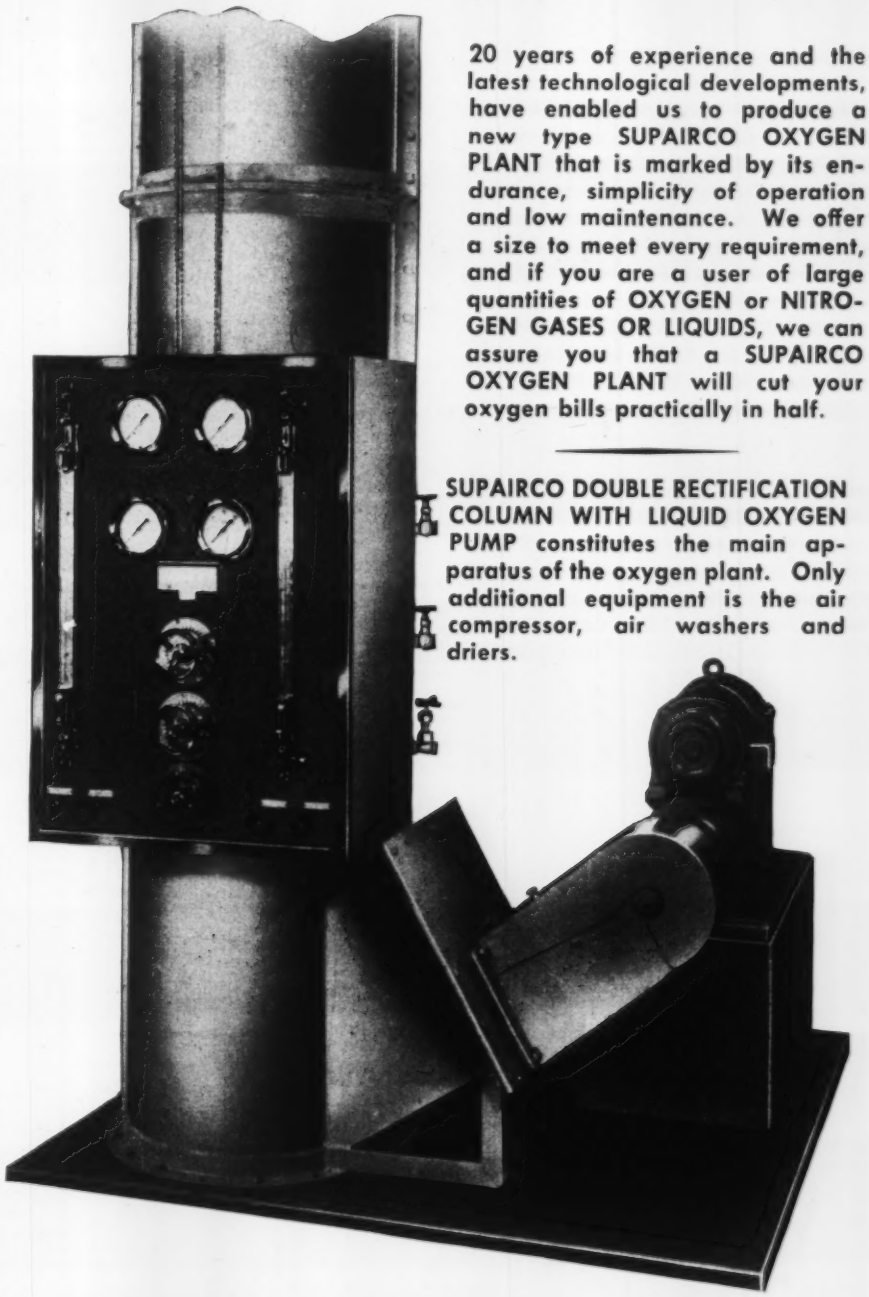

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demand for merchant iron levelled off last week. There is no pronounced move by melters to stock up for future requirements. Pig iron production holds at 100 per cent of capacity.

Cleveland—With foundries melting at the best rate in months, demand for merchant iron is strong. Supplies are adequate for current needs, but there is no surplus. Consequently, any further expansion in demand will result in a corresponding tightening in supply conditions. Furnaces are shipping every pound of metal produced almost as quickly as it is produced. Virtually no iron is piled in furnace yards. All nine blast furnaces here are active.

Chicago—Number of furnaces in blast in the district was reduced to 40 when Carnegie-Illinois Steel Corp. took its No. 5 stack at South Works out for partial relining. Repairs are expected to be completed in about a month.

Brimingham—Merchant iron melters are producing at capacity rate but are not meeting all orders. Cast iron pipe plants are on full schedules resulting in increased iron demand. Woodward Iron Co. plans a new blast furnace which will add about 80,000 tons annually to district capacity.

St. Louis—Pig iron production remains at 1060 tons daily capacity. Demand is moderately up, particularly from foundries. Supplies are being spread thinly among consumers, but are adequate.

Scrap . . .

Scrap Prices, Page 138

Pittsburgh—Open hearth scrap prices remain nominal due to absence of mill purchases of dealers scrap. However, advances in other areas resulted in brokers paying $1 to $2 above the last mill sale of $41 for No. 1 heavy melting steel. This in combination with the $47 level for heavy melting railroad steel indicates the next large tonnage mill purchase of industrial No. 1 heavy melting may approximate $45. Growing scarcity of low phos and specialty railroad items forced prices to advance $3 to $4 recently. Cupola yard and No. 1 machinery scrap also have turned sharply upward. Short turnings were up $1 last week on mill purchases.

Philadelphia—Scrap prices have advanced on basis of buying by brokers and dealers to cover old orders. Orders placed by mills are still light. No. 1 heavy melting is nominally $36.50-$37, delivered. While scrap prices are tending upward, there is an increasing flow of imported material. Within the past week five cargoes of scrap arrived at Baltimore for the account of the leading eastern consumer. Market on cast iron scrap is more stable than on steel grades. Malleable is extremely scarce and prices have jumped sharply to $49-$50.

New York—Brokers have raised buying prices on some open-hearth grades, although making no change on No. 2 heavy melting. Underlying strength is ascribed primarily to active consumer demand, especially at this time from certain of the small independent steel companies. Other factors include curtailed movement of industrial scrap due to mass vacations at various plants and lighter collections of yard scrap.

Boston—Steel scrap prices are stronger with several grades, including No. 2 heavy melting, advancing 50 cents. Buying is mostly against old orders. Yards are paying $16 to $18 for heavy melting steel. Mild flurry in cast has subsided.

Buffalo—Cast scrap prices jumped $1 to $1.50 a ton on a sale of cupola within a range of $36.50-$37.50. Strength dominates the entire market. Steelmaking grades are unchanged, but dealers refuse to accept new business from mills on the basis of prevailing prices. Supplies are dwindling. Influx of scrap by water continues with more than 125,000 tons arriving so far this season. About 30,000 tons of used rails arrived here via Montreal from France. It was purchased by Buffalo Steel Co., Tonawanda, N. Y.

Cleveland—Scrap prices advanced $2 a ton on cast grades, reflecting heavy buying by foundries. Railroad scrap is moving at higher levels, with No. 1 heavy melting $46-$46.50. Brokers are buying actively against old orders and expect mills to make new commitments within the next 10 days.

Cincinnati—Underlying strength in the iron and steel scrap market accounts for another boost in quotations although mill buying for August needs was completed previously. Foundry demand is gaining.

Detroit—Scrap trading is steady, with occasional bullishness noted by dealers but not of enough consequence to adjust prices. It will be another two weeks before the major automotive lists appear again.

Chicago—Despite absence of new buying by mills, the scrap market is turbulent. Brokers can obtain only small quantities at existing price levels and dealers are having to scratch for supplies. The trade believes mills would gladly take all offerings at present prices, although one major interest continues to restrict intake against old orders. Higher level of foundry operations is putting heavy pressure under cast grades, and railroad malleable is in strong demand at $47, up $2, with supply limited. Recent railroad lists closed at slightly higher prices than last mill purchases.

Birmingham—Scrap prices were revised upward early last week and brokers anticipate another jump within 10 days.

St. Louis—Scrap prices are strong but no large tonnages are changing hands. Buying is piecemeal, consumers avoiding large commitments. Market's main supports are small offerings by railroads and sparse outside shipments. No. 2 melting steel demand is down because consumers are seeking better quality. Foundry demand is picking up mildly.

Los Angeles — Scrap collections down 25 per cent, coupled with mills' insistent demand for steelmaking grades keep dealers' yards clean.

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Mills are relying on inventory and domestic supplies. Imports are small and no new commitments are being made. Prices are steady at higher levels established two weeks ago.

Seattle—Scrap dealers' stocks are depleted. Buyers are absorbing half the freight on shipments from outside points. Higher price levels, established Aug. 2, are expected to stimulate shipments from a wide area.

San Francisco — Prices of steel-making grades are steady. Mills are well supplied, but are buying for stockpiles.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

7000 tons, units 7 and 8, Delaware power station, Philadelphia Electric Co., to Bethlehem Steel Co.

1735 tons, state bridge work, contract 50-3, Van Wyck expressway, Queens county, New York, to Harris Structural Steel Co., New York.

1600 tons, 11 stringer state bridges, Acton-Boxborough - Harvard - Littleton, Mass., to West End Iron Works, Cambridge, Mass.; Gill Wyner Co., Malden, Mass., general contractor.

1550 tons, No. 53, New Jersey turnpike, Gloucester county, to Harris Structural Steel Co., New York.

1060 tons, additions, Ladish Co., Cudahy, Wis., to Worden-Allen Co., Milwaukee.

1000 tons, St. Casmir school and auditorium, Chicago, to Hansell-Elcock Co., Chicago.

800 tons, state hospital, Holidaysburg, Pa., to Bethlehem Steel Co.

600 tons, building, Powers Regulator Co., Skokie, Ill., to New City Iron Works, Chicago.

458 tons, bridge, Sec. 7-RB-F, Silvas, Ill., to Midland Structural Steel Co., Chicago, for fabrication by Allied Structural Steel Cos., Chicago.

425 tons, state bridge, York county, Pennsylvania, to Phoenix Bridge Co., Phoenixville, Pa.

400 tons, underground traffic interchange, James J. Storrow Memorial Drive, Charles River Reservation, Boston, to Bethlehem Steel Co.; Farina Bros. Inc., Newton, Mass., general contractor.

385 tons, apartment, 67-12 Yellowstone Blvd., Queens, New York, to Grand Iron Works Inc., that city.

350 tons, building, Salvation Army, Boston, to Groisser & Shlager Iron Works, Somerville, Mass.; McCutcheon Co., Boston, general contractor.

220 tons, bridge F265, Lyman and Tripp counties, S. Dak., to Egger-Seudder Co.

198 tons, building, Benjamin Harris & Co., Chicago Heights, Ill., to Hansel-Elcock Co., Chicago.

190 tons, warehouse, Phoenixville, Pa., to Max Corchin & Son, Philadelphia.

170 tons, two school buildings, Springfield, Mass., to Topper & Griggs, Hartford, Conn.; Ley Construction Co., Springfield, general contractor.

150 tons, bridge, ER-S-23(6), Etoe county, Nebraska, to Gate City Steel Works Inc., Omaha, Nebr.

140 tons, 5-story office building, Ninth Federal Savings & Loan Co., First avenue and 45th street, New York, to Harris Structural Steel Co., that city.

120 tons, Washington state Toll bridge, to Poole, McGonigle & Dick, Portland, Oreg.; Anderson Bridge Co., Tacoma, general contractor.

120 tons, bridge S-0059(1), Penrose, Colo., to Burkhardt Steel Co., Denver.

100 tons, school building, Springfield, Mass., to Haarmann Structural Steel Co., Holyoke, Mass.; Ley Construction Co., Springfield, general contractor.

100 tons, military installation, to Bethlehem Pacific Coast Steel Corp., Seattle; Morrison-Knudsen Co., Seattle, general contractor.

100 tons, unstated government project, to Pacific Car & Foundry Co., Seattle.

100 tons, Humptulips bridge, Washington

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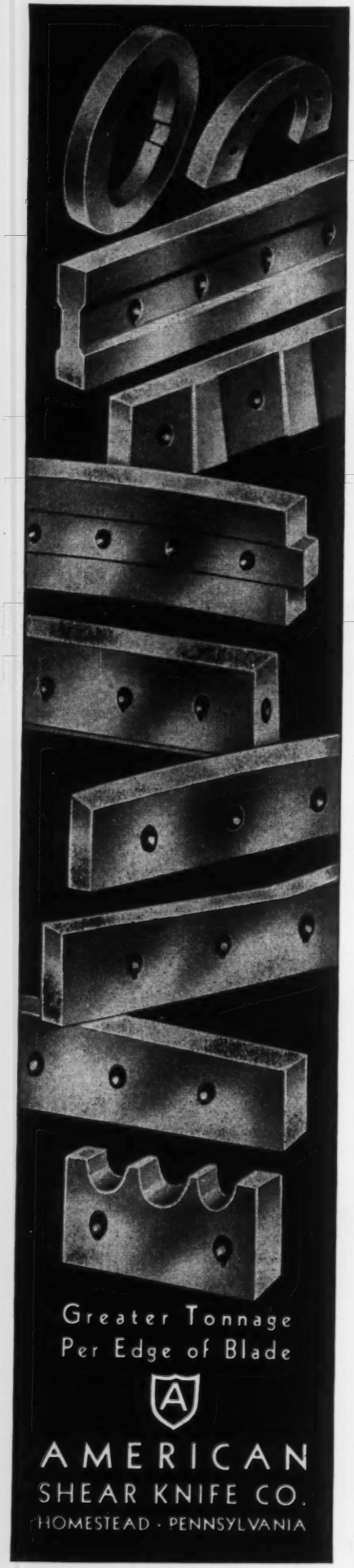

state, to Pacific Car & Foundry Co., Seattle, by Forest Reserve.

STRUCTURAL STEEL PENDING

9000 tons, No. 44, New Jersey turnpike, Union county; Poirier & McLane, New York, low on general contract, with a bid of $4,068,675.

3250 tons, state bridge work, Crawford county, Pennsylvania; bids Aug. 25.

3000 tons, No. 50, New Jersey turnpike, Bergen county; Stock Construction Co., New York, low on both alternate general contract proposals.

2300 tons, bridge between Trenton, N. J., and Morrisville, Pa., for Delaware River Joint Toll Bridge Commission; bids Aug. 31.

1450 tons, No. 42, New Jersey turnpike, Newark, N. J.; bids Aug. 22; also 12,500 feet of steel piles.

1040 tons, No. 57, New Jersey turnpike, Burlington and Mercer counties; general contract awarded to George M. Brewster & Sons, Bogota, N. J.

900 tons, warehouse, Penn Fruit Co., Philadelphia; bids closed Aug. 10.

800 tons, state bridges, Danvers-Middleton-Topsfield-Boxford, Mass.; bids Aug. 22, Boston.

700 tons, state bridge, Schuylkill county, Pennsylvania; up for bids Aug. 18; earlier ones rejected.

650 tons, state bridge, Schuylkill county, Pennsylvania; bids Aug. 18.

240 tons, plant addition, Electric Storage Battery Co., Philadelphia; bids closed Aug. 10.

140 tons, Seattle city light substation; bids in.

100 tons, including reinforcing, Eklutna river bridge, Alaska; bids to General Services Administration, Seattle, Aug. 28.

100 tons, (85) structurals and (15) bars, state bridge, Hatfield, Mass.; W. W. Wyman Inc., Greenfield, Mass., low.

Unstated, two radial gates, hoists, etc., Potholes East canal, Columbia Basin project; bids to Bureau of Reclamation, Denver, Aug. 29.

Unstated, Northgate project theater building; bids to John Graham, architect, Seattle, Aug. 15.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1500 tons, sludge and elutrition tanks, Southerly Sewage Disposal Plant, Cleveland, to Patterson-Lietch Co., Cleveland.

1500 tons, St. Anthony Falls lock and dam, Minneapolis, to Paper-Calmenson Co., St. Paul.

1005 tons, underground traffic interchange, James J. Storrow Memorial Drive, Charles River Reservation, Boston, to Concrete Steel Co., Boston; Farina Bros. Inc., Newton, Mass., general contractor.

750 tons, Druid City hospital units, Tuscaloosa, Ala., to Ceco Steel Products Corp., Birmingham; Daniel Construction Co., Birmingham, general contractor.

364 tons, dormitory, Moody Bible Institute, Chicago, to Truscon Steel Co., Youngstown; A. L. Jackson Co., Chicago, contractor.

225 tons, Charles Miller Hospital, St. Paul, to Truscon Steel Co., Youngstown.

200 tons, local bank building, blood bank building addition and state highway bridge, to Northwest Steel Rolling Mills Inc., Seattle.

185 tons, St. Luke's School, St. Paul, to Paper-Calmenson Co., St. Paul.

176 tons, St. John's student residence, Collegeville, Minn., to Hustad Co., Minneapolis.

120 tons, also 113 tons steel joist, YMCA building, Decatur, Ill., to Laclede Steel Co., St. Louis.

100 tons, hospital addition, Stamford, Conn., to Fireproof Products Co., New York; Vuona Construction Co., Stamford, general contractor.

100 tons, addition to Seattle's Diablo power dam, to Bethlehem Pacific Coast Steel Corp., Seattle; Morrison-Knudsen Co., Seattle, general contract.

REINFORCING BARS PENDING

788 tons, No. 57, New Jersey turnpike, Burlington and Mercer counties; general contract awarded to George M. Brewster & Sons, Bogota, N. J.

513 tons, state bridge work, Crawford county,

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Pennsylvania; bids Aug. 25; also large quantity of steel pipe piling.
175 tons, ferry dock, Mackinaw City, Mich.
158 tons, includes 216 tons for bridge and 242 tons for paving, Shawnee State Park, Venango and Jefferson counties, Pennsylvania.
110 tons, Gordon Park seawall, Ohio State Proj. 289, Cleveland.
100 tons, No. 42, New Jersey turnpike, Newark, N. J.; bids Aug. 22.
332 tons, state bridge work, Schuylkill county, Pennsylvania; bids Aug. 18.
360 tons, building, Colgate-Palmolive-Peet Co., Jeffersonville, Ind.
211 tons, building, Illinois Paint Works, Sears, Roebuck & Co., Chicago.
200 tons, Oregon state administration building, and tuberculosis treatment unit, Salem, Oreg.; bids to Board of Control Aug. 11 and Aug. 18, respectively.
180 tons, apartment buildings, 7353 and 7361 S. Shore Dr., Chicago.
178 tons, paving, LR 765(4-A) Allegheny county, Pennsylvania.
121 tons, Shaw brook culvert, Cleveland.
100 tons, Cleveland engine plant superstructure, Ford Motor Co., Dearborn, Mich.
100 tons, including steel screens, Coulee dam repairs; bids to Bureau of Reclamation, Coulee Dam, Aug. 31.
Unstated, three building additions to St. Joseph's Hospital, Aberdeen, Wash.; general contract to General Construction Co., Seattle.

PLATES . . .

PLATES PLACED

675 tons, tanks for Sun Oil Co. at Marcus Hook, Pa., and Toledo, to Chicago Bridge & Iron Co., Chicago.
230 tons, standpipe, American Waterworks Service Co., Chatham township, New Jersey, to Chicago Bridge & Iron Co., Chicago.

PLATES PENDING

100 tons plus, floating covers, Salem sewer project and treatment plant; bids to Salem, Oreg., Aug. 14.
5000 tons, 158,000 ft 20 to 30 in. water pipe and fittings; Beall Pipe & Tank Co., Portland, Oreg., low $872,807 to Medford, Oreg.
Unstated, materials for Cushman power plant No. 2; bids to Tacoma, Aug. 7.
Unstated, five storage and fuel tanks; bids soon to Atomic Energy Commission, Idaho Falls, Idaho.
Unstated, settling and storage tanks, Jim Creek project; bids to 13th Naval District, Seattle, Aug. 21.

PIPE . . .

CAST IRON PIPE PLACED

450 tons, 4 to 12 in., for Bremerton, Wash., to Pacific States Cast Iron Pipe Co., Provo, Utah.

CAST IRON PIPE PENDING

150 tons, for Kent, Wash.; bids rejected; new call issued.
400 tons, Stateside Construction Co., low to Pasco, Wash., $42,072; for steel pipe $32,031.

STEEL PIPE PENDING

Unstated, 1654 ft 12 in. water system project; bids to Tacoma Aug. 7.

RAILS, CARS . . .

RAILS PLACED

St. Louis-San Francisco, 27,500 tons, to Tennessee Coal, Iron & Railroad Co., Birmingham.

RAILROAD CARS PLACED

Seaboard Air Line, 1225 freight cars, comprising 500 box, 200 covered hopper cement and 100 covered phosphate rock cars, placed with the Pullman-Standard Car Mfg. Co.'s Bessemer, Ala., plant; 400 gondola cars with Bethlehem Steel Co.'s Johnstown, Pa., plant, and 25 caboose cars, with the Kenton, O., plant of the International Car & Railway Equipment Mfg. Co.
Pennsylvania, 5000 freight cars, including 2000 gondolas to American Car & Foundry Co., New York; 1000 box cars to Pressed

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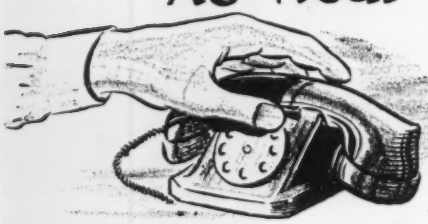

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MASS., Brookline 46—Harry I. Dixon, Metallurgical Products Co., 1199 Beacon Street, Phone Longwood 6-8093.

MICH., Detroit 4—C. C. Miller, 8186 Livernois Avenue, Phone Tyler 5-3338.

MINN., St. Paul 4—A. A. Gustafson, 2580 University Avenue, Phone Midway 7630.

N.Y., Syracuse 2—J. R. Stewart, 300 University Bldg., Phone 2-9271.

OHIO, Cleveland 18—C. P. Critzer, The Case Hardening Service Co., 3091 Mayfield Road, Phone Fairmount 3533.

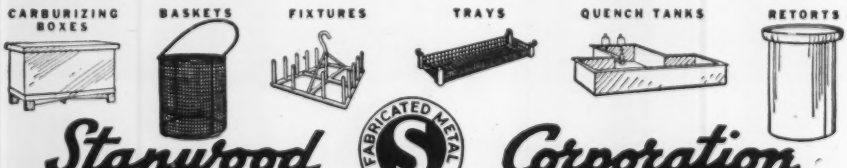
OHIO, Dayton 9—Harold L. Rogge, 2415 Fairmont Avenue, Phone Walnut 4303.

PENN., Pittsburgh 19—R. A. Schmidt, 404 Frick Bldg., Phone Court 2310.

TENN., Memphis 7—Eugene S. Craig, 1101 Poplar Avenue, Phone 2-5777.

TEXAS, Houston 3—B. F. Coombs, 2221 Telephone Road, Phone Wayside 7189.

WIS., Milwaukee 2—Robert M. Onan, Colby-Abbott Bldg., 759 N. Milwaukee Street, Phone Broadway 2-5285.



Stanwood Corporation
4825 W. Cortland St. Chicago 39, Ill.

Steel Car Co., Pittsburgh; 750 gondolas and 250 box cars to General American Transportation Corp., Chicago; 1000 gondolas to Pullman-Standard Car Mfg. Co., Chicago.

New York Central, 6001 cars of this total, 4000 to Despatch Shops, East Rochester, N. Y.; 1000 box cars to Pullman-Standard Car Mfg. Co., Chicago; 500 gondolas to Bethlehem Steel Co.; 500 seventy-ton gondolas one 125-ton well type flat car to the Greenville Steel Car Co., Greenville, Pa. The 4000 placed with Despatch Shops comprised 1500 box cars, 1000 fifty-five-ton hopper cars, 500 seventy-ton hopper cars, 500 seventy-ton gondola cars and 500 refrigerator cars.

Canadian Pacific, 1000 fifty-ton box cars, 700 of which will be built by National Steel Car Corp., Hamilton, Ont., and 300 by the Eastern Car Co., Trenton, N. S.

Union Pacific, 3500 freight cars, of which 1000 fifty-ton box cars will be built at St. Louis plant of American Car & Foundry Co., 1000 gondola cars at Chicago plant of General American Transportation Corp., and 1000 fifty-ton box cars and 500 flat cars at the railroad's own shops.

St. Louis-San Francisco, 500 fifty-ton box cars to the Pullman-Standard Car Mfg. Co., Chicago.

International Railroad, 23 covered hopper cars, to American Car & Foundry Co., New York.

Wabash, 500 box cars, to town shops, Decatur, Ill.

Wabash, through Ann Arbor Railroad, 75 covered hopper cars, to undisclosed builder.

RAILROAD CARS PENDING

Wabash, through Ann Arbor Railroad, 1000 box cars; through New Jersey, Indiana & Illinois, 1000 box cars.

Wabash, 100 mill-type gondolas and 50 flat cars; purchase under consideration.

LOCOMOTIVES PLACED

New York Central, 27 diesel-electric switch engines, to Lima-Hamilton Corp., Lima, O.

Louisville & Nashville, 41 diesel-electric locomotives; placed.

Seaboard Air Line, 66 diesel-electric locomotives, comprising thirty 1500-hp road switching units, and six 2250-hp road passenger units to the Electro Motive Division, General Motors Corp., La Grange, Ill.; twenty 1600-hp road switching units, to the American Locomotive-General Electric Companies, Schenectady, N. Y., and ten 1000-hp yard switching engines to Baldwin Locomotive Works, Eddystone, Pa.

Chicago, Milwaukee, St. Paul & Pacific, 12 electric locomotives to General Electric Co., Schenectady, N. Y.

FERROALLOYS

(Continued from Page 135)

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., 8MxD, bulk, 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lots 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Low-Carbon Ferrochrome Silicon: (Cr 34.41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 20.50c per lb of contained chromium plus 11.30c per pound of contained silicon; 1" x down, bulk 20.65c per pound of contained chromium plus 11.50c per pound of contained silicon, F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D; packed, max 0.50% C grade, $1.03 per lb of contained chromium.

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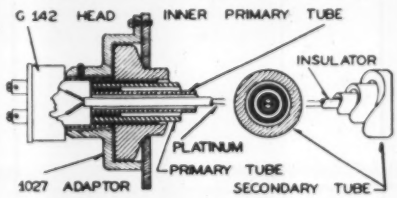

couple assembly is light in weight and permits easy replacement of new elements into a protecting tube assembly.

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ton lot $1.05, less ton $1.07. Delivered. Spot, add 5c.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 17.00c per lb of contained Si; packed 18.40c; ton lot 19.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c, less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk, 14.65-15.0c per lb of contained Si, carload packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 19.0c per lb of Si, c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 7.65c per lb of alloy, ton lots packed 9.05c, 200 to 1999 lb 9.40c, smaller lots 9.90c. Delivered. Spot up 0.5c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3⅜ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.45c per lb of briquet, c.l. packaged 11.25c, ton lot 12.05c, less ton 12.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.30c, per lb of briquet, c.l. packaged 11.1c, ton lot 11.9c, less ton 12.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.65c. Delivered. Spot, add 0.25c.
(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lots 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 95.00c per pound of Mo contained, F.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%.) Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot add 0.25c.

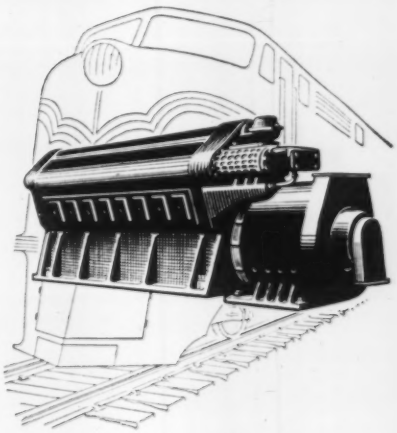
Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $167 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C



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Diesel engines in railroad locomotives are piling up an enviable trouble-free performance record. Many castings in these engines contain specified Molybdenum contents.

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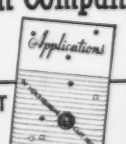

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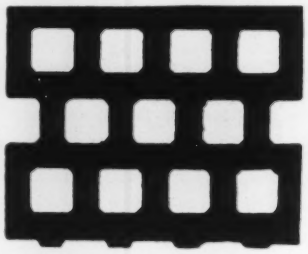

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3-4.5%.) Contract, $183 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.10.

Grainal: Vanadium Grainal No. 1, 93c per lb; No. 6, 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Trungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

Zirconium Alloys

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., frt allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $3.50 per lb of contained Cb, less ton $3.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min. C 0.30 max.) ton lots, 2" x D, $2.67 per lb of contained Cb plus Ta, delivered; less ton lots $2.72.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%; Zr 0.75-1.25%, C 3.50-5%). 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 16.5c per lb of alloy, ton lots 17.50c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca. 5-7%, Ti 9-11%). C.l. packed, 17.0c per lb of alloy; ton lots 18.0c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth and Washington, Pa., packed in bags containing 20 lb of molybdenum, 95.00c.

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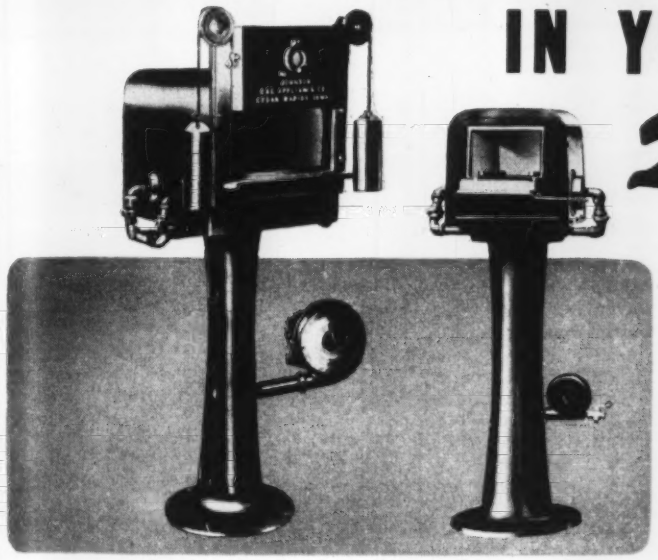

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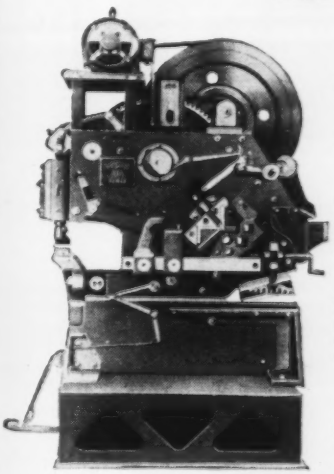

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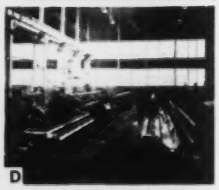
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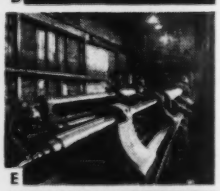
F—Heat Treating Two 60,000 lb. Ship Forgings.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Metalworking Briefs

CONSTRUCTION, ENTERPRISE ORGANIZATIONAL CHANGES

California

Tilden Tool Co., Pasadena, Calif., plans to construct a plant in San Clemente, Calif., in the near future. The company manufactures precision tools and special bits.

California

United States Pipe & Foundry Co., East Burlington, N. J., will build a $2.5 million plant on the east shore of San Francisco bay. It will be completed next July and its production of cast iron pipe will be largely for the petroleum and utility industries. It will be the company's fourth plant in the country and the first west of the Mississippi river.

California

Cookson Co., manufacturer of steel doors, will build a 12,000-square foot plant in San Francisco at a cost of about $50,000. Completion is expected in about three months.

California

Construction started on a new $500,000 research laboratory building for the **National Canners Association** in Berkeley, Calif. Completion is scheduled for Feb. 15, 1951. The new facilities will provide about 75 per cent more space than the present laboratory in San Francisco.

California

Golden Grain Macaroni Co. started construction of a 42,000-square foot building in San Leandro, Calif., to replace its present headquarters in San Francisco.

California

Bank of America, San Francisco, is planning a new $446,000 building for its Oakland, Calif. branch. Working plans are now being drawn and subcontracting bids will be called this month.

California

Arthur D. Little Inc., Cambridge, Mass., will design and construct a pharmaceutical plant in Los Angeles for **Riker Laboratories Inc.**, wholly owned subsidiary of Rexall Drug Co., Los Angeles. The Little organization will procure the equipment, supervise construction and installation and start up the commercial plant. Louis C. Dunn Inc., Los Angeles, is the general contractor.

Delaware

Rigidsteel Construction Co. was chartered by the state of Delaware. Capital of the firm is listed at $100,000. Corporation Trust Co., Wilmington, Del., is serving as the principal office.

Delaware

Windowguard Corp.—metals—filed a charter of incorporation with the secretary of state's office, Dover, Del. Prentice-Hall Corporation System Inc., is serving as the principal office.

Delaware

Texas & California Tubes Corp.—iron and steel products—filed a charter of incorporation with the secretary of state's office, Dover, Del. Corporation Trust Co., Wilmington, Del., is serving as the principal office.

District of Columbia

Electronic Parts Manufacturers Association was incorporated in Washington to co-ordinate defense activities in the industry. Charles C. Koch, president, Merit Transformer Corp., Chicago, is president of the Association.

Illinois

Gerity-Michigan Corp., Adrian, Mich., purchased the assets of Janette Mfg. Co., Chicago. Gerity-Michigan makes die castings and does electroplating for the plumbing and automobile industries. Janette makes speed reducers, blower wheels and rotary converters.

Illinois

Marshall Field & Co., Chicago, will build a suburban shopping center in Skokie, Ill., at an estimated cost of between $15 million and $20 million. The international situation will play an important part in determining when construction begins.

Illinois

Tri-Par Mfg. Co. leased a building at 1712 N. Kilbourn Ave., Chicago, for the manufacture of metal furniture.

Illinois

Fox Valley Box Co., Geneva, Ill., manufacturer of corrugated boxes, began construction of a plant near St. Charles, Ill.

Indiana

Socony-Vacuum Oil Co., New York, will build a thermofor catalytic cracking unit at its refinery in East Chicago, Ind. C. F. Braun & Co., Chicago, is the general contractor.

Kentucky

Pennsylvania Salt Mfg. Co., Philadelphia, plans extension of manufacturing facilities at Calvert City, Ky., to increase output of hydrofluoric acid and sulphuric acid. It's part of a $1 million program.

Massachusetts

Hall-Watson Co.—iron and nonferrous castings—moved its plant and offices to 11 Fourth St., Taunton, Mass.

Missouri

White-Rodgers Electric Co., St. Louis, awarded a joint contract to Stupp Bros. Bridge & Iron Co., that city, and the Mississippi Valley Structural Steel Co., Maplewood, St. Louis, for furnishing and erection of the structural steel to be used in construction of the company's plant on Reavis-Barracks Rd. for manufacture of thermostatic controls. Bids will be taken soon on the general construction contract. W. B. Ittner Inc., St. Louis, is the architect and engineer.

Missouri

B. C. MacDonald & Co., St. Louis, is appointed railway sales representative for diesel starting batteries by **Nickel Cadmium Battery Corp.**, Easthampton, Mass. The firm also represents Goddard & Goddard Co., Detroit, milling cutters; Amplex Division, Chrysler Corp., bearings, Detroit; Camden Forge Co., Camden, N. J., axles, crank pins and piston rods; Duff-Norton Mfg. Co., Pittsburgh, jackets and lifting devices; Michigan Wire Cloth Co., Detroit, all types of wire cloth; Federal Products Corp., Providence, R. I., dial indicators and precision measuring instruments.

New York

Niagara Mohawk Power Corp. bought a large tract of land south

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